RAILROAD GAZETTE

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Contributions.

Train Resistances.

New York, March 3, 1898.

To the Editor of the Railroad Gazette:

In the matter of curve resistance it might be well to consider the curves used on the Manhattan Railway, which are as sharp as 90 ft. radius.

Mr. von Borries' formula $\frac{4800}{R - 180}$ would not work in this case.

We know that these curves are operated with ease daily and that trains weighing as follows:

Engine	47,000 lbs.
Five cars	147,000 "
Five hundred passengers	75,000 "
Total	269,500 lbs.

or about 135 net tons of 2,000 lbs., are hauled around curves of 90 ft, radius with a restricted speed of six miles per hour, by engines having a weight on the driving wheels of 31,500 lbs.

With an adhesion of $\frac{1}{5}$ or 6,300 lbs. the total resistance does not exceed 47 lbs. per net ton of 2,000 lbs.

In 1886 Mr. Sprague determined by dynamometer the draw-bar pull of the Manhattan engines to be 4,600 lbs., which for five cars loaded as above would give 41 lbs. per net ton for the total resistance at 6 miles per hour.

We know, however, that these trains can and occasionally do pass these curves at greater speeds than 6 miles, probably 12. T. C.

Station Stops and Side Doors.

Chicago, March 7, 1898.

To the Editor of the Railroad Gazette:

I read in your issue of Feb. 11 a criticism on a certain statement made in the Scientific American as to the relative length of stop on the underground railroads of London and the elevated railroads of New York, and have read the singularly disingenuous reply of that journal in a later issue. The statement made was that "on account of the side doors, one at each pair of seats, trains are emptied more rapidly and stops are briefer than on our own elevated lines." To this you replied that the average length of stops on the London underground railroads is 30 seconds, while in New York the average is somewhere between 12 and 15 seconds.

A short time ago, in talking with an officer of the Metropolitan West Side Elevated Railroad, Chicago, he said that the Metropolitan had lately been timing the stops of its trains at stations, and had also had the station stops on the other Chicago elevated roads timed, and the results showed that the Metropolitan trains consumed slightly more time at stations than those of the other roads. The cars and platforms on all these roads are built and arranged in the same manner, and the conclusion was reached that the difference was in the class of people carried, the South Side Elevated passengers moving more quickly than those on the other roads.

The stops at the stations on the Metropolitan where passengers have to be taken on or left off vary from 6 to 15 seconds, the latter being a very long stop; the average of a large number of stops was from 8 to 8½ seconds. The average station stop for the "Alley L" trains, on the other hand, is about 7¾ seconds, while the Lake street is 8 seconds. A stop of 30 seconds would almost be considered a blockade.

I am not sure, but believe the average stop on the Illinois Central is about the same as on the elevated roads; the passengers waste no time in getting on trains, and those who intend getting off at stations are always in the aisle near the door, or on the platform, before the train stops.

During the World's Fair the Illinois Central, as all the world knows, ran express trains with cars open at the sides, without aisles, and these could be unloaded very quickly, but would not be suitable except where all the passengers got off at one station, which would never happen in local service. Open cars were also run on the Intermural Railway at the World's Fair Grounds, and there was always considerable confusion and loss of time by people running back and forth on the platform to find a seat. It seems to me the big advantage which end doors and center aisles have in local service is that passengers can enter at any gate and find a seat (or a place to stand) after the train starts. Side doors also weaken the framing of the car and necessitate expensive construction. To have side doors and aisles would interfere with the seating capacity of cars.

I see in the American Machinist of March 3 an article on the same subject which confirms precisely your position. The writer of that article says he timed a number of stops last Spring on the London Underground and found that the average was about 29 seconds, which certainly is pretty close confirmation of your own observation. He gives there some reasons why the London stops are longer than those in New York, some of which reasons I remember to have read in the Railroad Gazette some years ago.

M. C. B.

Acid or Basic Steel.

Pittsburgh, March 2, 1898.

To the Editor of the Railroad Gazette:

You ask some questions as to the relative merits of acid and basic open hearth steel. Perhaps it would be better to explain briefly the processes, give a few illustrations and allow engineers to draw their own conclusions.

All open hearth steel is made in furnaces of the same general type, gas regenerative, and usually Siemens. When the acid process is used, the bottom of the furnace, the bed in which the steel is melted is made of highly refractory siliceous sand. The charge to be melted is placed in this bed and the furnace is brought up to a melting heat.

The base of each charge is pig iron, too high in silicon and carbon, and these elements must be reduced until the desired composition is reached. There are two general ways of doing this, one is known as the pig and ore process; the other, as the pig and scrap process. In the pig and ore process a quantity of iron ore is charged with the pig, sufficient, by the reduction of the ore, to abstract the surplus carbon and silicon. In the pig and scrap process, scrap is charged instead of ore, but inasmuch as the steel must almost always contain less carbon and silicon than the mean of that in the pig and scrap the surplus must be removed by oxidation, either by the addition of iron ore, or by stewing in the furnace until the oxygen of the flame does the work. It is safe to assume that some ore is usually applied because it quickens the operation.

In this acid process all of the sulphur and all of the phosphorus that are in the pig, the scrap, and the ore remain in the steel. If the ore is not all reduced perfectly, and sometimes it is not, it is liable to be mixed with the steel—a deadly enemy to its good qualities.

In the basic process the furnace bottom is made of magnesite and dolomite; either or both may be used, and probably the best practice is to make the bottom of magnesite and keep it in repair with dolomite. The charges and methods are the same as in the acid process, except that a quantity of limestone is used, sufficient to take up the silicon and form a basic slag.

In this process almost all of the phosphorus in the charge, and a considerable percentage of the sulphur, are retained in the slag and so are eliminated from the steel. In this process, as in the acid, if the ore and limestone are not thoroughly fused and carried into the slag, some portion may get into the steel to its injury.

The bugbear of the basic in some minds is the limestone used. This would be funny if it were not pitiable; limestone is the natural flux of iron and is used in all blast furnaces. In the open hearth it carries off the phosphorus and a portion of the sulphur; the acid process retains all of both phosphorus and sulphur.

Either process worked badly will give bad results, and either process worked properly will give good results. Given an acid steel and a basic steel of identical composition, equally well worked, there is no reason manifest why one should excel the other. Given charges of identical composition in an acid and a basic hearth, the basic steel will be incomparably purer chemically than the acid steel, giving a manifest reason why the basic should be the better, and at no increase of cost over the acid.

As to specifications; some engineers hold that if the steel fulfills given physical tests they care nothing for method or composition. Other engineers go so far as to attempt to dictate charges, methods, chemical composition and physical tests. The first may get very rotten material manipulated by skillful hands to meet his tests, only to fail when subjected to some unexpected stress. The second attempts to dictate beyond his knowledge and to require that which he cannot enforce; he may also cut off competition so as to leave himself as to cost at the mercy of one or two makers, with the probability that they will know enough to use their opportunity.

Reasonable specifications such as are used by the most experienced and the most intelligent men, to be found largely among the leading railroad engineers, give the physical requirements and place a moderate maximum of phosphorus, sulphur, silicon, manganese, &c., &c., allowable, and leave charges and methods to the manufacturers, who are the best fitted to judge of them.

Let me illustrate the two views. Some fifteen years ago a large railroad made a rigid physical specification for its springs; the springs were furnished by various makers and all endured the most careful and rigid tests, meeting fully the requirements of the specifications. The springs continued to break; hundreds of freight cars, many passenger cars, and quite a number of locomotives were constantly in the shops for repairs; hundreds of thousands of dollars of capital were thrown idle and the carrying capacity of the road was reduced. Hundreds of tons of broken springs were in the scrap heap, so many indeed that the railroad men found that to require replacement according to contract would ruin many of the spring makers.

After careful investigation a fair and reasonable limit was put upon silicon, phosphorus, sulphur, carbon, &c., &c., in the spring steel, and nothing said about methods. This specification was complied with at no increase in the price of springs, and a few days ago the maker of that specification told me that in the last ten years they had hardly known what it was to have a broken spring.

I could multiply this with the cases of boiler steel; wrist-pin steel, axles, &c., &c., but there would be no use in lumbering your columns. There has been no such trouble with bridges, roof trusses, &c., because there the maximum strains are known and provided for, and with large factors of safety; and besides, bridges are protected by guard rails, derailing switches, and every known device to keep off accidental strains. Yet bridges do fail sometimes.

But if not, if a better bridge can be had for the same money why not have it? And if an equally good bridge can be made by any process, why meddle with that in which you are not an expert?

Finally, Mr. Editor, the sum and substance of my answer to you must be that common sense is the best guide. WM. METCALF.

Mr. Acworth's Notes on American Railroads.

We published last week extracts from an article printed in the London Times, giving a very interesting account of an English traveler's observations of American railroads, which we assume to have been from the pen of Mr. W. M. Acworth, who visited this country last October. Following are extracts from a second article appearing in the same journal under the date of Feb. 22. The first article has been widely reprinted in the daily newspapers of the country, as probably the second will be also.

Punctuality.

If I were asked to give in one sentence the reason why American trains in spite of great difficulties are excellently punctual, I should say it was because punctuality is insisted on. Instead of engines being sent out, as often happens here, with trains that they are evidently and notoriously incapable of hauling to time, engines are built powerful enough to play with their trains. I stood one night on the platform of the huge Union depot at St. Louis, where the trins of 22 different companies converge, and watched one express after another steam out. Many of them weighed at least 400 tons, most of them certainly over 300. Yet not once did I see a driving wheel slip at starting.

Again, luggage seems to be handled more smartly. The baggage cars are of adequate size with adequate-sized doors, and instead of the arrangements being left to no one in particular, there is on each train and at each station a baggage-master, whose special duty it is to see that the baggage to be put on or to be put off is so arranged, before the arrival of the train, that it can be transferred with a minimum of delay.

Further, the running of each train is controlled all the way from a central office. With us it is left in the main to the individual signalman to settle whether to shunt a coal train at his box, or let it go on a stage further in the hope that the express will not overtake it and be checked. Every business man knows the difference between a continuous and a periodical or occasional audit, and this is practically the difference between the American system of punctuality control and our own.

There is another even more important difference in organization. Every one who has watched the working of trains here must have noticed instances where an express, starting from London for a two

hours' run, loses, say, three minutes by a signal-check at starting and two hours later runs into its station precisely three minutes late. And yet it is certain that, had the train been timed three minutes faster in the time-table, the driver would have come in to time. The driver has done his duty; he has run his train in the time allotted him; had he run faster he might have pleased an outside authority, the superintendent of the line, by securing punctuality, but he would have dissatisfied his own chief, the locomotive superintendent, and possibly, if coal premiums were in use on his railway, have hurt his own pocket, by burning more coal. In America they appreciate the logical position that the man who drives the engine is as much a servant of the operating department as the man who collects the tickets. Once place the "engineer" in that position and the operating department may be trusted to see that he gets out of his engine any required speed that he reasonably can get.

Organization.

But the difference between English and American railway organization is fundamental throughout the entire service. And that difference so profoundly affects not only the working of the lines, but the comparative value of the railways of the two countries, as permanent investments, that it deserves to be dealt with at greater length. English railways, as we all know, are managed by a chairman, a good or even first-rate man of business, but seldom or never a railway expert by profession, presiding over a board, also non-experts, none of whom give to the affairs of the railway more than a limited portion of their time. Consequently the real work, both deliberative and executive, falls upon the officers. Of these there are four or five heads of departments, secretary, general manager, engineer, &c., known as "board officers" from the fact that they report direct to the board or its committees, among whom the general manager is always the most important. But above directors and officers stand the shareholders in general meeting assembled, who alone have the power to raise money or to declare dividends, and to some extent the auditors, whose independence of the board is carefully guarded. Further, the risk of a "corner" among a few large shareholders is practically obviated by the statutory provision that the first ten shares confer one vote apiece; beyond ten and up to 100 it needs five shares to command one vote, while beyond the 100 only one vote is reckoned for every ten shares. . . .

Now compare this with normal American practice . . . Government interference with the management is practically nil. A shareholders' meeting is held once a year, but at that meeting a bare majority of the stock can absolutely overpower all resistance of a minority, however large and however influential. The meeting elects the board of directors, the directors elect from their number a president, a man who has usually worked his way up right through the service, and, it may be, one or more vice-presidents. And then the board in its turn abdicates in favor of the president. . . . Questions of rates and fares and all the negotiations with traders or other companies arising from them, the appointment of the entire staff, the operation of the railway, the maintenance of its structure and equipment and the purchase of supplies, all belong to the president, with his vice-presidents, and to them alone.

In a word, an American railway represents "one-man power" much more than anything with which we have to do in the railway world here. And, just as we have seen "one-man power" in this country pull down a great banking house, in spite of a position and a prestige almost equal to that of the Bank of England, so in America an incompetent, reckless, still more a dishonest, president, can in a few years bring the most solvent railway company into the hands of a receiver. Given, on the other hand, the ideal president, shrewd and far-seeing, firm and yet conciliatory in dealing with the public and the public authorities, and honest not only in being above mere pecuniary temptation—most of them are that nowadays—but in refusing to sacrifice the future of the undertaking to the present—given such a man, and he can do more for his company than any one man here, be he chairman or general manager. For to his colleagues, the directors, he speaks as an equal—or, indeed, as more than an equal, in that as a rule, though the Vanderbilt companies are an exception, he is their chairman—while at the same time he dominates them by his superior knowledge of railway matters in general and of their own railway in particular. And if, on the one hand, he shapes the policy of the board, on the other he disposes absolutely of the services of every member of the executive staff and moves his men about like chessmen till he has fitted each into the place best suited for him. I came, for example, upon a case of an officer of exceptional ability, retained in a nominally subordinate, but very important post, who was receiving the normal salary of his position through the ordinary pay rolls, and as much again by checks passed through a special account. . . .

I question whether the most conservatively managed English railway is as conservative as the best American roads. I know one railway—there is no need to mention its name, as the Americans are much too wide awake to allow any of its securities to cross the Atlantic—which is at the present time earning 15 per cent. on its ordinary shares. Yet it pays, and will, I am assured, continue to pay, a dividend at only half this rate, the whole of the surplus being, in the phrase of a railway president of my acquaintance, "ploughed into the road." Or take another instance; a passenger on the main line of the Pennsylvania, as he travels up the beautiful valley of the Juniata, may see, in not a few places, side by side (1) the original single line which the railroad company bought from the State of Pennsylvania 40 years back, winding corkscrew fashion almost along the bed of the stream; (2) a first-class double line, substituted for it, but still with a good many curves and kinks; (3) the main line of the present day, as straight and as solid, built, one might say, in as monumental a fashion as though it had been constructed by Brunel himself. And the whole process of evolution up from the tramroad stage of development has been paid for out of revenue. . . .

No English chairman or general manager could enforce upon the shareholders a policy of year by year limiting the dividend to a point far below what the actual net earnings of the undertaking would justify. So, too, the ideal president can naturally get better results out of his railway when staff and methods of operation can be shifted and moulded at his sole discretion than where the management is, so to speak, put into commission.

There is, however, another point to be mentioned. The president is chairman and managing director; he is not general manager of his line. With us a general manager is forced to combine two incompatible functions. He is first the active executive head of a huge organization, with his time more than fully occupied with matters of daily routine working. And, secondly, he is called on to stand outside and detached from that organization, to see what changes of circumstances threaten its stability, in what new direction it should naturally develop, or what new methods may improve its functional activity. . . . In practice, strength and energy being limited, one side or other of the work is bound to be relegated to the second place, to the no small injury of the railway company. Compare this with the organization of a great American company like the Pennsylvania. There is a president, entirely free from routine administration, whose whole time is devoted to questions of general policy and large schemes of extension or improvement. Under him are three aides-de-camp, entitled "assistants to the president," men of high position and ripe experience, who can examine and inquire and report with authority if any new subject requires an exhaustive investigation. Then there are three vice-presidents, of whom the first is in charge of the finances, while the second and third divide between them the control of what we call the traffic. For, in America, as in Continental countries, what with us is a single department is split into "traffic" and " operation" (service commerciale et exploitation; Verkehr und Betrieb); and the second vice-president is accordingly responsible for the relations between the railway company and the public; while the third presides over the actual handling of the traffic which his colleague procures for him. None of these gentlemen has any regular executive work. That is carried out by their subordinates, the responsible heads of departments. . . . Even this hardly exhausts the list of officers engaged to do nothing but think and study improvement. . . .

It may be objected that all this headquarter staff is expensive, and though a few hundred thousand dollars are not of much account to the great Pennsylvania system with a revenue of over 18 millions sterling per annum, it doubtless does cost money. But that the money is well spent no one can doubt who has seen the results. In the last 30 years our English methods of operation have remained practically stationary, and our English railway rates have fallen so little that the outside public doubts whether they have fallen at all. During the same period the average receipts of the Pennsylvania have fallen from 1d. per ton per mile to only a fraction over ¼d. Yet, methods of operation having been simultaneously improved, the Pennsylvania was able, at the end of a long period of unexampled depression, after spending £300,000 out of revenue on permanent improvements and carrying over a balance of £160,000, to announce to its shareholders a distribution for the year 1896 of the not unsatisfactory dividend of 5 per cent.

Boiler Tests at the Washington Mills, Lawrence, Mass.

In connection with a description of the power plant of the Washington Mills, Lawrence, Mass., published in our issue of Nov. 27, 1896, a special type of boiler was illustrated designed by Messrs. Dean & Main, of Boston. Lack of space in the boiler house made necessary the special design, and two of these boilers were built by the Atlantic Works, East Boston, Mass.

Each boiler is of the multi-tubular gun-boat type and has two 48-in. Morrison corrugated furnaces entering a combustion chamber, from which passes 590 tubes, 2½ in. outside diameter, to the smoke-box. The grates are 7 ft. 6 in. long; the bridge wall 12 in. long; the combustion chamber 5 ft. long and 6 ft. 8 in. high, and the tubes are 14 ft. long between the heads. The length of the boilers over all is about 31 ft. The unusual ratio of heating to grate surface of 85 to 1 was adopted, because the boilers were liable at times to be forced to their full capacity.

The minimum inside diameter of the boilers is 9 ft. 10⅛ in., and the maximum outside diameter, 10 ft. 2 in. The weight, empty, of each boiler is 90,000 lbs., and the weight of water held by one boiler is 60,000 lbs., so that the working weight of one boiler is about 75 tons.

In December last Messrs. Dean & Main conducted a series of tests with the two boilers above mentioned, using two kinds of coal, Pocahontas and New River. The coal was taken just as it came from a pile out of doors which had previously been in a rain and snow storm. The firing was done by the regular mill fireman, and it is believed better firing could have been done, resulting in an equivalent evaporation per pound of coal, from and at 212 deg. Fahr., above 13 lbs.; however, the performance as it stands is quite creditable. The trail was conducted according to the stardard method, using a fresh wood fire at the start. The two boilers were tested simultaneously, but the quantities given in the table apply to but one boiler. No analysis was made of the coal, so that the performance reduced to a heat basis cannot be given. These tests are particularly interesting because of the rapid combustion which took place, the size of the units and the high results obtained, which are given in the accompanying table.

Results of Boiler Trials.

	Kind of Coal					
	Pocahontas.	New River.	New River.	Pocahontas.	New River.	Pocahontas.
Date of trial	Dec. 22.	Dec. 23.	Dec. 30.	Dec. 31.	Jan. 4.	Jan. 5.
Duration of trial, hours	11½	11½	11½	11½	11½	11½
Dimensions and Proportions—						
Grate surface of each boiler, sq. ft	60	60	60	60	60	60
Water-heating surface of each boiler, sq. ft	5,300	5,300	5,300	5,300	5,300	5,300
Superheating surface, sq. ft	0	0	0	0	0	0
Ratio of water-heating surface to grate surface	85	85	85	85	85	85
Average Pressures—						
Steam pressure in boiler, by gage, per square inch, lbs	122.30	123.20	123.00	122.56	118.50	122.9
Atmospheric pressure per square inch, lbs	14.68	14.54	14.61	14.63	14.94	14.75
Absolute steam pressure in boiler, per square inch, lbs	136.98	137.74	137.61	137.19	133.44	137.65
Force of draught in column of water between damper and boiler, ins	0.875	0.845	0.89	0.89	0.44	0.41
Average Temperatures—						
Of external air, deg	26	31	44	35	9	30
Of fire-room, deg	77	82	94	73	77	85
Of feed-water before entering boiler, deg	36.7	36.7	37.5	36.0	37.9	38.7
Of escaping gases after leaving boiler, deg	526	516	496	511	472	482
Fuel—						
Moist coal consumed, lbs	22,820	20,113	20,078	21,388	15,323	15,125
Moisture in coal, per cent	5.09	4.47	3.19	6.61	5.2	6.00
Dry coal consumed, lbs	21,659	19,214	19,438	19,974	14,526	14,217
Wood consumed, lbs	456	536	520	591	501	514
Coal equivalent of wood, lbs	183	214	208	236	200	206
Total dry coal consumed, including wood equivalent, lbs	21,842	19,428	19,646	20,211	14,727	14,423
Total dry refuse, lbs	2,028	1,633	1,713	2,017	1,295	1,338
Total dry refuse, per cent	9.28	8.66	8.72	9.98	8.79	9.28
Total combustible, lbs	19,814	17,795	17,933	18,193	13,431	13,085
Dry coal consumed per hour, lbs	1,899	1,689	1,708	1,757	1,280	1,254
Quality of Steam—						
Percentage of moisture in steam, per cent	0.5	0.5	0.5	0.5	0.5	0.5
British Thermal Units—						
Heat units absorbed by boiler per pound of steam generated, B. T. U	1,184	1,184	1,183.6	1,185.0	1,182.5	1,182.4
Heat units imparted to boiler per pound of dry coal, B. T. U	10,929	11,467	10,869	10,845	10,835	11,328
Heat units imparted to boiler per pound of combustible, B. T. U	12,048	12,519	11,907	12,047	11,879	12,487
Factors of Evaporation—						
Factor of evaporation for boiler	1.226	1.226	1.226	1.228	1.225	1.224
Water—						
Total water pumped into boiler, lbs	202,622	189,098	181,321	185,898	135,607	138,881
Water actually evaporated, corrected for quality of steam, lbs	201,609	188,153	180,414	184,968	134,929	138,187
Equivalent water from and at 212° F., lbs	247,173	230,675	221,188	227.141	165,288	169,141
Equivalent water from and at 212° F., per hour, lbs	21,493	20,058	19,233	19,751	14,373	14,708
Evaporative Performance—						
Water actually evaporated per pound of dry coal, lbs	9.23	9.68	9.18	9.15	9.16	9.58
Equivalent per pound of dry coal from and at 212° F., lbs	11.32	11.87	11.25	11.24	11.22	11.73
Water actually evaporated per pound of combustible, lbs	10.18	10.57	10.06	10.17	10.05	10.56
Equivalent per pound of combustible from and at 212° F., lbs	12.47	12.96	12.33	12.48	12.31	12.93
Commercial Horse-Power—						
On basis of 34½ pounds of water from and at 212° F., per hour by boiler, H. P	623	581	557	572	416	426
Number of square feet of heating surface per horse-power, sq. ft	8.51	9.12	9.5	9.26	12.72	12.42
Horse-power per square foot of grate surface, H. P	10.38	9.69	9.29	9.54	6.94	7.10
Rate of Combustion—						
Dry coal actually burned per square foot of grate surface per hour, lbs	31.66	28.1	28.5	29.3	21.3	20.9
Rate of Evaporation—						
Water evaporated per square foot of heating surface per hour from and at 212° F., lbs	4.05	3.78	3.63	3.72	2.71	2.77

Hand Release for Electric Locking.

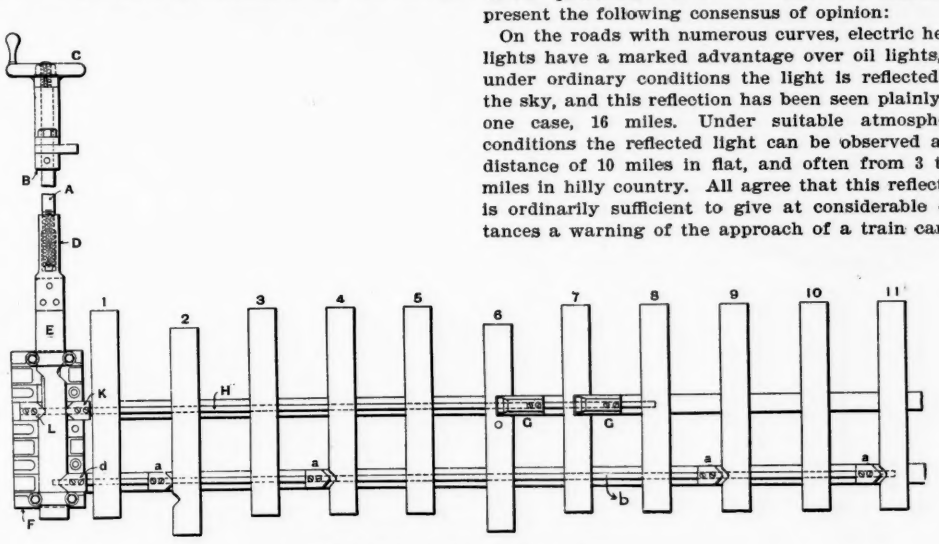
In the Railroad Gazette of Sept. 10, 1897, there was a description of the electro magnetic locks which the National Switch & Signal Co. uses in connection with derailing switches at railroad crossings. In this arrangement there is the usual switch for releasing the lock, whenever it is necessary to do so in order to avoid tying up signals in consequence of a train stopping after receiving a clear signal, but before passing over the crossing. This release is the ordinary simple electric circuit-closer encased in a glass box. In response, however, to a demand in some quarters for a device with which it shall not be so easy for an operator to suspend the usual order of procedure, the company has devised a mechanical release, the working of which is shown

by the accompanying engraving. With this device the operator or signalman must perform an act which will require considerable time and thus necessitate some thought and deliberation; and he must lock all home signals in the danger position before the derailing lever can be unlocked. This mechanical release has been applied in several cabins, and is liked by those who have used it, although it is somewhat more expensive than the simple electric lock. It was devised by Mr. Sperry, Western Agent of the National Company, and was by him used on the elevated railroads of that city.

The drawing gives a front view of this device as applied to the locking frame of the National machine for a simple grade crossing. Derail lever No. 6 has been reversed and electrically locked by reversing home signal lever No. 2. The mechanical hand release mechanism is applied to the end of the machine, and is so arranged as to compel the operator to lock all signals at danger before he can release the derail lever or open the derail. The mechanism consists of a vertical rod A, carried through the guide B and revolved by the hand wheel C. The lower end of this rod is threaded to move the lug D 2½in. by 25 turns of the hand wheel. This lug is riveted to a regular tappet E, which travels vertically through a short section of the regular interlocking plate F. This tappet is notched to receive and actuate the dogs on the locking bars.

It will be noticed that the tappets 2, 4, 9 and 11 are notched to receive the dogs a, which are carried on the locking bar b.

There are two electric locks used. These are applied to the tappets 6 and 7, representing the derails, and at the right of the plunger of these locks are releasing dogs G G, fastened to the lock rod H,



Hand Release for Electric Locking.

which is moved by the dogs K and L, through the vertical downward motion of the tappet E. The dogs G G have a thin wedge-shaped nose which, when moved to the left, pushes the armature lever of the electric lock inward, which action withdraws the bolt holding the tappet No. 6.

If, for any reason, it is necessary for the operator to release the derail lever from the electric lock the manipulation would be as follows: The initial movement of the hand wheel C moves the lock rod b through the dog d, carrying with it the four dogs a a a a, locking the tappets of signals 2, 4, 9 and 11. Before this can be done, however, the home signal No. 2 must be put normal, raising the tappet so that the notches on all home signal tappets are in line. The continuation of this movement of the tappet E brings the dog K opposite the second notch in tappet E, and the final movement brings the beveled edge of notch on left side against the dog L, forcing it to the left and carrying with it the releasing dogs G G, which drive out the plunger of the electric lock as before described. This final movement of the tappet also brings a blank edge against the dog d, which prevents the reverse movement of the dogs a a a a, and consequently locks the four home signal levers 2, 4, 9 and 11 at danger. Derail lever 6 may then be placed normal, and if it is desired to signal a train on the opposing route, lever 7 can then be reversed, closing derails numbered 7. The tappet E is then reversed by revolving the hand wheel. By this action the signals are unlocked and at the same time the derail lever is locked closed by the automatic action of the electric-lock plunger, for since the magnets of the lock have not been re-energized the plunger of the lock is moved by gravity and will lock the tappet when the derail is closed. After this automatic locking of derail lever No. 7, either home signal No. 4 or No. 9 can be cleared.

It will be seen that by this arrangement the derail lever can be released without regard to whether it was locked by the circuit breaker on the home signal lever or by the failure of the releasing circuit.

Electric Headlights for Locomotives.

Numerous experiments were tried with electric headlights about 14 years ago, but the early forms were crude and costly, and their introduction met with strong opposition. But the electric headlight has reached a point where it should no longer be considered as experimental, and the makers claim for it a place in the list of railroad safety appliances. Many accidents at night have been averted by its use and it is plausibly contended that the money thus saved will in the end more than pay for the first cost of equipping engines, the cost of maintenance and the cost of repairs. We have lately endeavored to ascertain what the experience has been of roads which have used the latest type of electric headlight. No attempt was made to collect opinions from those who have only used the older forms, or who have not used electric headlights, but of 11 roads with which we communicated, eight sent very complete replies to our questions, and in several cases the answers of individual enginemen were sent in addition.

There are now in use about 200 such headlights, of which number about 50 are old style and are rapidly being replaced by more modern apparatus. These lights are found principally on roads in the Central and Western States, although there are a few on Southern railroads. The experience reported covers periods ranging from six months to five years. Almost all these headlights are on passenger locomotives, but their use on freight engines is now being considered by several roads. All the roads reporting have single track, and most of them have numerous curves. There is a marked similarity in the replies to our questions, and it is therefore not difficult to present the following consensus of opinion:

On the roads with numerous curves, electric headlights have a marked advantage over oil lights, as under ordinary conditions the light is reflected on the sky, and this reflection has been seen plainly, in one case, 16 miles. Under suitable atmospheric conditions the reflected light can be observed at a distance of 10 miles in flat, and often from 3 to 4 miles in hilly country. All agree that this reflection is ordinarily sufficient to give at considerable distances a warning of the approach of a train carrying an electric headlight, and it is obvious that by this means a train may in many cases be recognized farther away than it could be in the day time. One-half mile seems to be about the distance at which small obstructions on straight track can be plainly seen, and it is quite generally agreed that the rays of light are a protection at grade crossings in giving warning to wayfarers of approaching trains. The statement that has been made, that the electric light interferes with the colored signal lights, seems to be of doubtful accuracy, as all report that red and green lights are not affected. One states that white lights do not show so plainly with the electric light. Another writes that frequently in the case of low switch stands, the position of the target can be seen as plainly at night as by day, and in passing through yards at moderate speed, the electric light enables the engineman to see the position of switch rails at considerable distances ahead. No cases have been reported where the eyes of the enginemen on locomotives carrying electric headlights have been injured because of the brighter light. In answer to the question as to the value of the electric headlight in preventing head or rear collisions on straight track, three state that the lights have been found to be of great value. In running around curves the chances for such accidents are reduced in proportion as the conditions are favorable for seeing the pencil of light in the sky.

In regard to objections one writer states that the first cost is an objection. This, of course, must be considered with due regard to the benefits to be derived. Another states that the theoretical objections have not been found to exist in practice, the chief trouble being to teach the enginemen to care properly for the electrical apparatus. Most of the failures of the light while on the road can be traced to the lack of proper attention. Some have had trouble with glasses breaking, due to the difference of temperature between the inside of the headlight case and the outer air, which difficulty has been overcome by providing sufficient openings at the bottom of the cases to give proper ventilation. Some trouble has been found where improper carbons were used, the feeding apparatus of the lamp becoming disarranged; with suitable carbons no difficulty was experienced. All agree that the latest type of electric headlight has reached such a stage as to be considered a safety appliance.

Perhaps the most common question asked by railroad men who have not seen the electric headlight is that concerning the possible annoyance or danger that may result from the dazzling of enginemen's eyes by lights coming from the opposite direction. On this point the testimony of the officers of the roads who have used the lights the longest seems to be very clear. We have seen the statements of the superintendents of motive power of three roads, all of which have more or less double track. The weakest of these statements says that it is rather difficult for an engineman to locate another train until he has become somewhat accustomed to the light; but neither of the others makes any such qualification. The superintendent of motive power of a road operating 30 or 40 miles of double track, and having 12 electric headlights which have been running three years or more, says that he has yet to hear the first complaint from enginemen on this point. The testimony of the third writer, who has had experience with 20 lights for over six years, is to the same effect. If one is directly in the path of the rays of light, his eyes may be dazzled by such a powerful lamp within, say, 600 ft.; but if he is four or five feet to one side of the center line from the reflector the effect is not at all troublesome. On a straight double track railroad the center lines of the two tracks are about 12 ft. apart, and this is said to be sufficient to obviate the possibility of any dangerous blinding of enginemen.

Numerous incidents are cited where the electric headlight has prevented injury to people, both at grade crossings and elsewhere on the track; while in the Western States it seems to be useful in preventing the killing of animals. Two similar examples are given where it is thought train wrecks have been prevented by the electric headlight; in each of these cases some horses were caught between the ties on high bridges, but were seen by the engineman in time to bring the train to a stop before reaching the bridge. Another instance occurred near Indianapolis where a fast passenger train, running at about 40 miles an hour, was stopped in time to prevent a collision with a box car which had been blown out of the siding and had stopped the main track. Another case is reported on a western road where a train was stopped in time to avoid striking a large tree which had fallen across the track during a storm. With the ordinary oil lights serious damage would have resulted in all these cases. One Superintendent of Motive Power has sent us copies of 17 reports, nine dated in a single month, where trains carrying electric headlights have been stopped in time to prevent striking stock or obstructions on the track; the amount saved by thus preventing damage he considers to be due to the use of the electric lights, and adds, "we are seriously contemplating putting the electric light on all our engines."

The first cost of the improved electric headlights is about six times that of the oil light, although in very recent times the first cost of electric headlights has been reduced more than one-half. One set of carbons will burn on an average for about 8 hours, although one road says they will go from 10 to 12 hours. The average cost for the carbons is given by one road as 24 cents a month for each engine, and on the same road the oil and repairs for the ordinary headlight cost 59 cents per month per engine. We have been unable to obtain any exact figures as to the cost for repairs of the latest electric headlights, principally for the reason that this apparatus is all new and extra parts are furnished free of charge by the manufacturers for the first two years. One user states that this item will be quite small.

There can be no doubt that the electric headlight will aid materially in reducing the number of collision and of accidents caused by running into obstructions. During the last three months of 1897 there were over 100 such accidents which happened at night. It is through avoiding accidents that the present users of electric headlights expect returns from the original investment. The use of electricity will not effect a saving in the cost of maintaining headlights, but this in itself is a small item.

The Extraordinary Demands of the Inter-State Commerce Commission.*

The power for which the Commission reaches out is of the most unlimited and far-reaching character. In the report it says:

"The freight rate may determine whether the Kansas farmer shall burn his corn for fuel or send it to market. The traffic manager may decree whether

* Extract from a pamphlet by Walker D. Hines, Assistant Chief Attorney of the Louisville & Nashville, criticising the annual report of the Interstate Commerce Commission. Mr. Hines has also issued a pamphlet of 39 pages, containing extracts from Congressional debates in 1884, 1885, 1886 and 1887, throwing light on the question whether or not Congress intended to confer upon the Interstate Commerce Commission the power to make railroad rates.

an industry shall exist or a locality flourish. This question touches the prosperity and welfare of the people at large throughout the whole nation."

So the Commission wants to be allowed to decree whether the Kansas farmer shall burn his corn for fuel or send it to market, and to decree what industries shall exist and what localities shall flourish. It wants all this power of transcendent importance centralized and placed in the hands of its five members, or three if five fail to agree. This stupendous power which the Commission depicts exists nowhere now. There are immutable commercial conditions now inexorably limiting the rates of carriers which the carriers have come to recognize, or lose the traffic. It is nonsense to talk about a traffic manager determining whether the Kansas farmer shall burn his corn for fuel or send it to market. No railroad would deliberately so fix its rates as to make it necessary for the Kansas farmer to burn his corn, for thereby it would lose the transportation of the corn to the market, and no doubt the transportation of coal to the farmer, and would gain absolutely nothing. The Kansas farmer can depend upon it that so long as railroads are allowed to recognize the conditions of commerce and transport freight accordingly the railroads of Kansas will see to it that he does not have to burn his corn, if that corn can be transported to market at anything above the mere cost of moving it over the railroad. He can have no such assurance if the Commission gets the power it is after.

If there were an unusually heavy corn crop, reducing the price to a very low level and necessitating the transportation of Kansas corn to market at a very low rate or not at all, it is highly probable that the Commission would sacrifice the Kansas farmer on the altar of its devotion to mathematical principles, as it has frequently attempted to sacrifice the railroads of the country. Thus, it would say that to make the necessary reduction in the rate on corn in order to get the corn to market would be an undue preference of that traffic over other kinds of traffic, since the cost of carrying the corn was as great as the cost of carrying the other traffic. It might also say that a very low rate on Kansas corn must not be given, because that would put Kansas farmers on an equality with other farmers nearer the market, which would be depriving the nearer farmers of the advantage of their more favorable location, and it would forbid the Kansas railroads from charging a low enough rate to take the corn to market. All this would be very hard on the Kansas farmer; but if he pointed out the hardship to the Commission it would console him, as it has often consoled the railroads, by saying that the Commission is not responsible for the law (thereby meaning its own unreasonable views), and that the fact that the loss results from its enforcement is no reason why it should not be enforced. If a Kansas man happened to be a member of the Commission he might see to it that Kansas corn did not get to the market; but such local representation is impracticable, and if practicable, would lead to the most unseemly sectional conflicts.

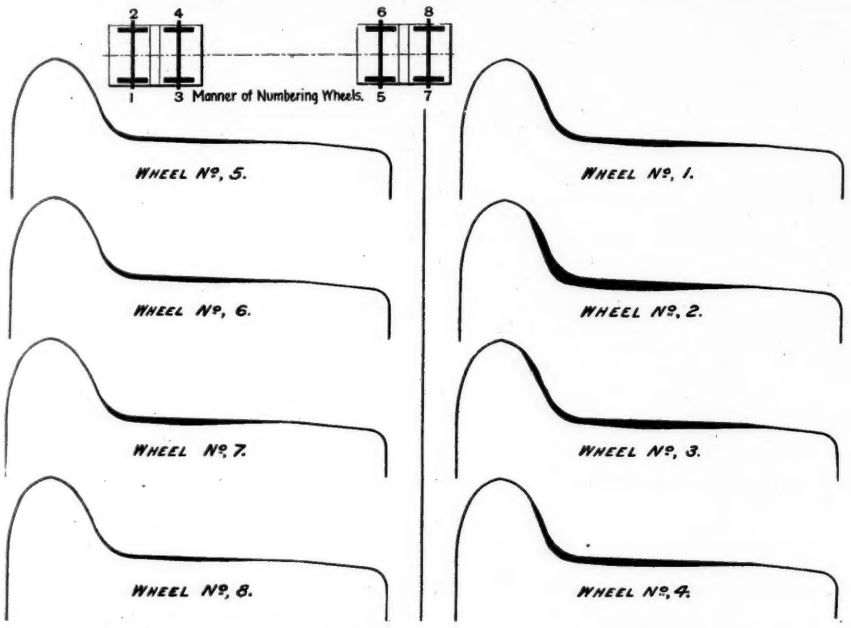
So long as the railroads of Kansas are allowed to transport corn to market in accordance with the conditions of commerce, the Kansas farmer has the best possible guarantee that he will never have to burn his corn for fuel when by any possibility the railroads can haul it to market without actually losing money on it. But when the prosperity of the Kansas farmer and of every other farmer, merchant, miner and manufacturer in the United States is turned over to the Commission, and it gets out its slate and makes its mathematical calculations, the present substantial guarantee which the Kansas farmer has will disappear entirely and nothing will take its place.

The Effect of Roller Side Bearings.

In our issue of June 4 last we illustrated a roller side bearing, which was then being introduced by the Chicago Railway Equipment Company, Chicago, and pointed out its essential features. For a long time it has been claimed that a suitable arrangement of rollers which would substitute rolling for sliding friction would result in a reduction of the car friction and increase wear of both wheel flanges and rails. That the flange wear actually is less where roller side bearings are used has been well demonstrated by Mr. A. M. Waitt, General Master Car Builder of the Lake Shore & Michigan Southern, who for some time past has been conducting service tests with the bearings made by the Chicago Railway Equipment Company.

Five baggage cars running in the same service between Chicago and New York were selected; two of these cars were fitted with the ordinary plain side bearings, while three cars had one truck each equipped with roller and the other trucks with plain side bearings. All the cars had 36-in. steel tired wheels. Plaster casts were taken of short sections of the tread and flange of each wheel at the beginning and likewise at the end of the test. The following mileage was made by the different cars during the test: Car 590, 72,605 miles; car 571, 61,940 miles; car 592, 65,825 miles; car 593, 57,113 miles; car 594, 53,112 miles.

In the accompanying engraving, made from typical diagrams constructed from the plaster casts, the shaded portions show the wear of the wheels under the different conditions. The diagrams show quite conclusively how important it is to reduce the side bearing friction to a minimum.



Truck Equipped with Automatic Frictionless Side Bearings. *Truck Equipped with Plain Side Bearings.*

Diagrams Showing Wheel Wear—Lake Shore & Michigan Southern Railway.

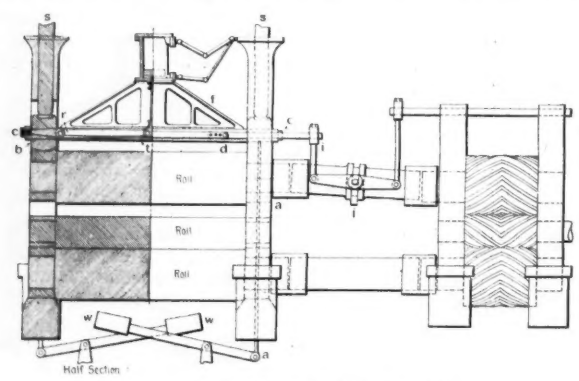


Fig. 1.—Three-High Rolling Mill.

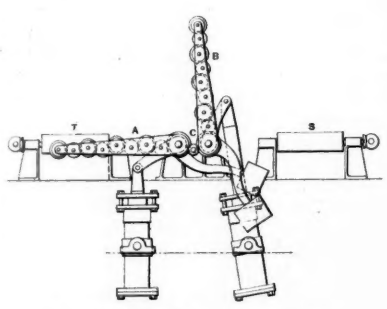


Fig. 2.—Transfer and Plate Turner.

weight of the release apparatus above the roll. Bearing blocks (b) with cylindrical surfaces compensate for any unequal wear upon the brasses, insuring a level and solid bearing for the releasing apparatus. Resting on these blocks is a cast steel box (c t c) 30 in. wide, extending from housing to housing. The bottom of the box is machined out at each end to receive a steel wedge and the screw block above is similarly formed. Along the sides of the box are bolted two cross frames (f f) supporting an hydraulic cylinder which has a piston connected (at t) with rods (t r) attached to the wedges.

It will be seen that in case a plate becomes "stuck" in the rolls it can be released immediately by admitting pressure to the lower end of cylinder, thus pulling out the wedges and allowing the upper roll to rise sufficiently to release the plate. The wedges move between babbitted surfaces, reducing the friction to be overcome to a minimum. The screws (s s) indicated in the drawing bear directly upon bronze washers set into the screw blocks. All slack in the joints at t and r is taken up by screws in the ends of the box which press against the wedges. It should be noted that all parts of the release apparatus are attached to the cast steel box. Only a small portion of this weight, however, rests upon the roll neck. Lugs projecting from the middle of the sides of the box rest upon a system of compound levers, which in turn rest upon extended portions of the steelyard rods running up through the riders. With these rods as fulcrums it will be readily seen from the sketch that the top coupling shaft and boxes are used as a counterbalance for the releasing apparatus to any extent desired, by simply changing the pin at d to any desired hole. The lever of which t d is a portion, extends from d to the opposite housing and supports the box at t. The other levers with saddle (j) are shown in cut.

New Equipment at the Brandywine Rolling Mills.

Worth Bros. Co. of Coatesville, Pa., have equipped a new steel mill the past season for making high grade firebox and shell plate. The most interesting features of the equipment are the large 132-in. Garrison mill and the plate turner of their own design. A Wetherill-Corliss engine, 42in.x60in. cylinder, developing about 3,000 H. P. at 80 rev. per min., drives the large mill. The driving pinions are 52 in. long by 39¼ in. diam. with housings weighing 30 tons each. The mill, which is now the largest in the United States, is 132 in. wide, with upper and lower rolls of 36-in. diam., with provision to increase to 40-in., and middle roll 22 in. in diam.; lift of upper roll 24 in. Each housing weighs 40 tons.

A number of improvements have been made on the three-high mill as commonly constructed, so that a general description of the mill will be of interest. The lower roll remains fixed at one elevation, the middle roll being moved up or down by hydraulic jacks until in contact with the upper or lower roll, as in other mills. The width of the boxes for the middle roll is greater than the diameter of the roll, enabling the boxings with the roll to be shipped through the housings longitudinally. The upper roll is counterbalanced, or rather, supported by steelyards with rods extending through the housings to the boxing of the roll. The counter weights are sufficient to support the upper roll and a part of the

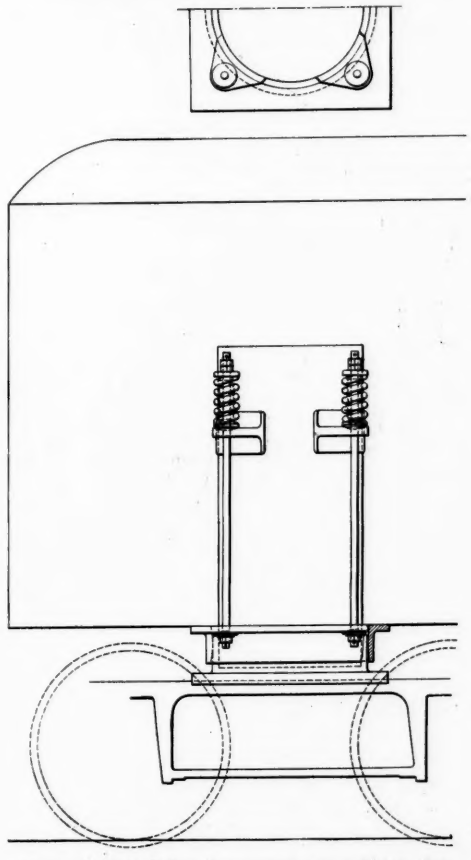
After being rolled at this mill the plates are carried along the cooling table on rollers driven in sections by a plain engine and a system of reversible clutches. The rollers are of the usual length, about 6 ft., but have lines of overhung and bracketed rollers on either side so that the widest plate is supported along the edges until it is sufficiently cool to hang over without becoming bent. After a run of about 130 ft., giving time for cooling and for the inspection of one side of the plate, the plate reaches the combined transfer and plate turner (Fig. 2). Suppose the plate advancing along cooling table T. It is stopped over the leaf of the plate turner which is composed of a number of arms A. This leaf is now raised till the trains of rollers on the arms come in contact with the plate; the rollers are set in motion by the pinion C, thus moving the plate. In the meantime the leaf B has been raised to the vertical so that the edge of the plate is stopped at C. Leaf A is now raised to the vertical, tilting the plate against B, which is lowered. Pinion C again drives the train of rollers and the plate is carried to the run S, which leads to the shear. The side of the plate which is now uppermost can be thoroughly inspected. The turning of the plate has taken but a moment and has caused no delay in the movement of the product. If desired the arms may be retained at the horizontal and the plate carried from either table to the other, as an ordinary transfer, by driving the rollers with pinion C. The arms are keyed to a rock shaft, properly counterbalanced and the whole turned by a single-acting hydraulic cylinder swung on trunions. The tables and plate turner are controlled by one man upon a slightly raised platform. One acid and one basic, open hearth furnace, each of 30 tons capacity, and a large Aiken hydraulic shear with 14 ft. knives, have also been added to the equipment.

The Manchester Ship Canal.

Nobody who has followed the monthly returns issued by the management of that gigantic but disastrous undertaking—the Manchester Ship Canal—

could have expected anything different from the sorry story revealed by the report of the directors for the half-year that has closed. Hopeless and hapless at present, the condition of the canal offers no prospect of improvement in the near future. The directors admit failure, dismal and lamentable. It has long been evident that the company is only able to pay its way without default on fixed charges by means of the revenue from the Bridgwater Canals. The Ship Canal revenue receipts amounted to £107,-333, and the expenditure to £88,326, leaving a credit balance of £19,007. The profits of the working of the Bridgwater department remain considerable—£22,-052. The significance of this is fully shown by reference to the capital accounts. Under that heading all put down to the Bridgwater Canals is £1,784,351, while the total capital expenditure is £15,162,171. The profit for the half-year is £22,052 on the Bridgwater section, while on the heavily capitalized canal itself it was but £19,007. This works out at about 1.25 per cent. on the Bridgwater Canal's capital, and 0.14 on that of the main undertaking. In other words, the subsidiary canals earn nine times as much on the capital expended on them as does the Ship Canal itself on its cost.

The half-year's net revenue amounted to £41,608, and this was insufficient to meet the interest on the first and second mortgage debentures, the shortcoming of £3,134 being made up from the accumulated Bridgwater revenue. But the existence of a situation sufficiently grave is disclosed by the observation that "The interest due to the Manchester Corporation, £112,500, has not been paid, and the total amount owing to the Corporation on 31st December was £618,750." Apart altogether from the actual figures here revealed, the condition of affairs has long been well known to the public. Manchester must of course pay the price of her stupendous folly. The familiar statement that "The amount standing to the debit of the net revenue account was £592,463, but as the Corporation of Manchester are allowing their interest to remain in arrear, the balance still available amounted to £26,287." That is to say £26,-287 is the difference between the debit due on the net revenue account and the amount due to the Manchester Corporation on 31st December. It can hardly be said, however, that this amount is still "available," for it rather looks as if it has gone the way of many other good things.



W. L. Austin's Boiler Suspension for a Motor Car.

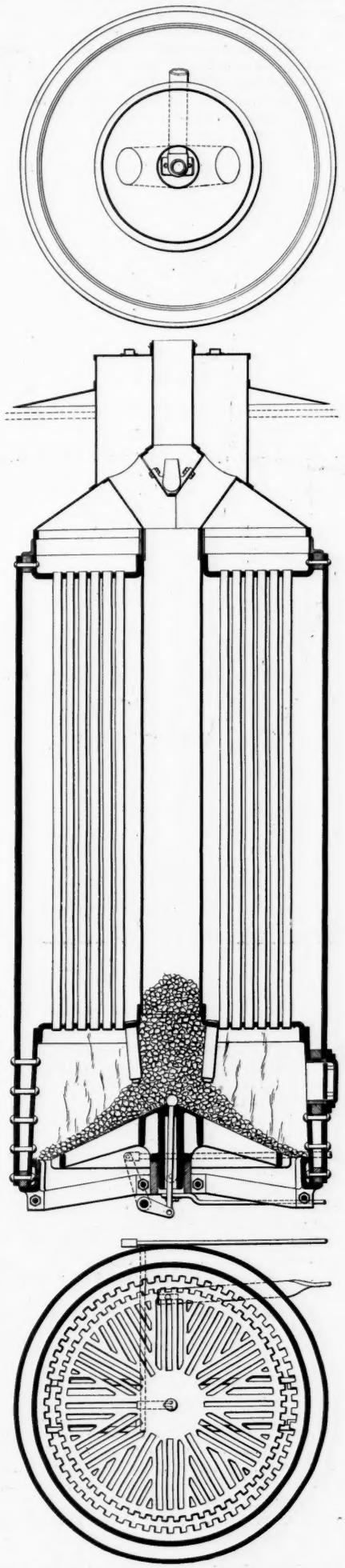
Speaking of the Ship Canal traffic alone, the directors admit that the rate of progress has not been so great during 1897 as in the two preceding years. This is not surprising, in fact it has been predicted over and over again in these columns that the progress—in no way remarkable from the first—would not continue. The growth of the volume of traffic, over the period of four years, is shown by the following figures:

	Tons.			
	1894.	1895.	1896.	1897.
In sea-going craft	686,158	1,087,443	1,509,658	1,701,047
In barges	239,501	271,432	316,579	365,336

The troubles to which reference has been made are by no means ended, and it is now suggested that the acquisition of the whole undertaking by Manchester is the most feasible plan for the future of the canal. It is said, however, that despite the hopeless character of the undertaking the original shareholders are by no means prepared to give it up.—Transport.

Another Baldwin Motor Car.

In our issue of March 4, page 153, appeared illustrations and a description of the steam motor car built by the Baldwin works for the Cincinnati, Hamilton & Dayton Traction Company for suburban service. The company is now building a car on the same principle, but larger, for the Detroit & Lima Northern. This latter car has, like the Cincinnati, Hamilton & Dayton car, compound cylinders, but, unlike that, it has no condenser. It is provided with a vertical, self-firing boiler, carried on the driving truck and forming the center pin of the car. Provision is made for spring suspension of the car body to the boiler. In this second motor the boiler is 60 in. diameter with 630 sq. ft. of heating surface, and will run 40 miles without attention to the fire. The tank capacity is sufficient for 60 miles. The engine is designed for a speed on the level, or on light grades, of 40 miles an hour, hauling two or three additional cars. The valve motion is placed above the axle and within the car, so as to be profected from dirt and to be easy of access. The cylinders are 9½ in. and 16 in. diameter by 18 in. stroke.



Baldwin "Magazine Boiler" for Steam Motor Cars.

This motor car can be easily run by one man, as the levers and fixtures are so arranged that he can sit facing the track, and the boiler and machinery require the minimum of care and attention. It seems likely that there are many cases in which such cars can be used for suburban work on lines of light traffic, giving, at the same time, reasonably fast service. Indeed, we have long thought and often said that there will be a reaction in this direction and that the disfavor of the old steam motor cars arose mostly from defective design. It seems reasonable that for lines where, for want of continous traffic or for other reason electricity is not adaptable, steam motor cars will be considerably used in the future development of comparatively light and frequent traffic, and we have often called attention to the great development of steam tramways in Italy.

The Nebraska Maximum Freight Law.

The Nebraska maximum freight law of 1893 has at last been disposed of. Justice Brewer, sitting in the U. S. Circuit Court at Omaha, pronounced it unconstitutional in a decision rendered Nov. 12, 1894, and it has been twice argued in the Supreme Court of the United States. Judge Brewer enjoined the officers of the State from enforcing the rates prescribed by this Nebraska act. In that decision he said that there is no more difficult problem than that of determining the reasonableness of rates and that the matter is so complicated by so many different facts and conditions that it is doubtful if any single rule can be laid down. Obviously, the effect of the reduction upon earnings is the first and principal matter to be considered, and this is a matter of computation. It was computed that the rates prescribed by the act would reduce the receipts from local freight (being freight inside the State limits) 29½ per cent., which would be "unjust and unreasonable to those who have invested their money in these railroad properties." He admitted that it is possible that with an increasing volume of business the rates proposed by the act would give a reasonable return and therefore leave is reserved to the defendants (the State) to move the court for a reinvestigation of the question whenever it is thought that business conditions are such as to make the prescribed rates reasonable.

On the 7th Justice Harlan, in the Supreme Court, made a decision pronouncing the statute unconstitutional and invalid, inasmuch as it is contrary to the Fourteenth Amendment, which provides that property shall not be taken without due process of law. The act itself fixes rates above which the railroads cannot go. The commissioners are by it empowered to reduce rates, but cannot change classification so as to raise rates or otherwise permit rates higher than the maximum of the statute. The Supreme Court now decides that the law is unconstitutional, and the gist of the opinion, so far as it has reached us through the medium of the daily press, is given in the extracts below.

Justice Harlan said that the following principles must be regarded as settled:

First—A railroad corporation is a person within the meaning of the Fourteenth Amendment, declaring that no State shall deprive any person of property without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.

Second—A State enactment, or regulation made under the authority of a State enactment, establishing such rates for the transportation of persons or property by railroad as will not admit of the carrier earning such compensation as under all the circumstances is just to it and to the public, would deprive such carrier of its property without due process of law, and deny to it the equal protection of the laws, and would therefore be repugnant to the Fourteenth Amendment to the Constitution of the United States.

Third—While rates for the transportation of persons and property within the limits of a State are primarily for its determination, the question whether they are so unreasonably low as to deprive the carrier of its property without such compensation as the Constitution secures, and therefore without due process of law, cannot be so conclusively determined by the Legislature of the State or by regulations adopted under its authority, that the matter may not become the subject of judicial inquiry.

This last proposition covers the case in point. Justice Harlan proceeds to make an exhaustive examination into the effect of the enforcement of the rates prescribed upon the business of the different Nebraska lines, showing the reduction to amount to 29.50 per cent. for the years 1891, 1892, and 1893. The

result was to show that each of the roads involved would for this period have conducted their business at a loss with only one or two exceptions, and those for only a short while.

It had been contended on behalf of the law that the State of Nebraska could legally require local freight business to be conducted even at an actual loss, if the company earned on its inter-State business enough to give it just compensation in respect of its entire line and all its business, inter-State and domestic. The Court did not accept this view, Justice Harlan saying:

"We cannot concur in this view. In our judgment, it must be held that the reasonableness or unreasonableness of rates prescribed by a State for the transportation of persons and property wholly within its limits, must be determined without reference to the business of an inter-State character done by the carrier, or to the profits derived from that business. The State cannot justify unreasonably low rates for domestic transportation, considered upon the ground that the carriers are earning large profits on its inter-State business, over which, so far as rates are concerned, the State has no control. Nor can the carrier justify unreasonably high rates on domestic business, upon the ground that only in that way can it meet losses on its inter-State business. So far as rates of transportation are concerned, domestic business should not be made to bear the losses on inter-State business, nor the latter the losses on domestic business. It is only rates for the transportation of persons and property between points within the State which the State can prescribe, and when it undertakes to prescribe rates not to be exceeded by the carrier, it must do so with reference exclusively to what is just and reasonable, as between the carrier and the public in respect of domestic business."

Referring to the arguments on the two sides of the case as to what are reasonable charges, the opinion laid down the following: "We hold that the basis of all calculations as to reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value the original cost of construction, the amount expended in improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under any rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and to be given such weight as may be just and right in the particular case.

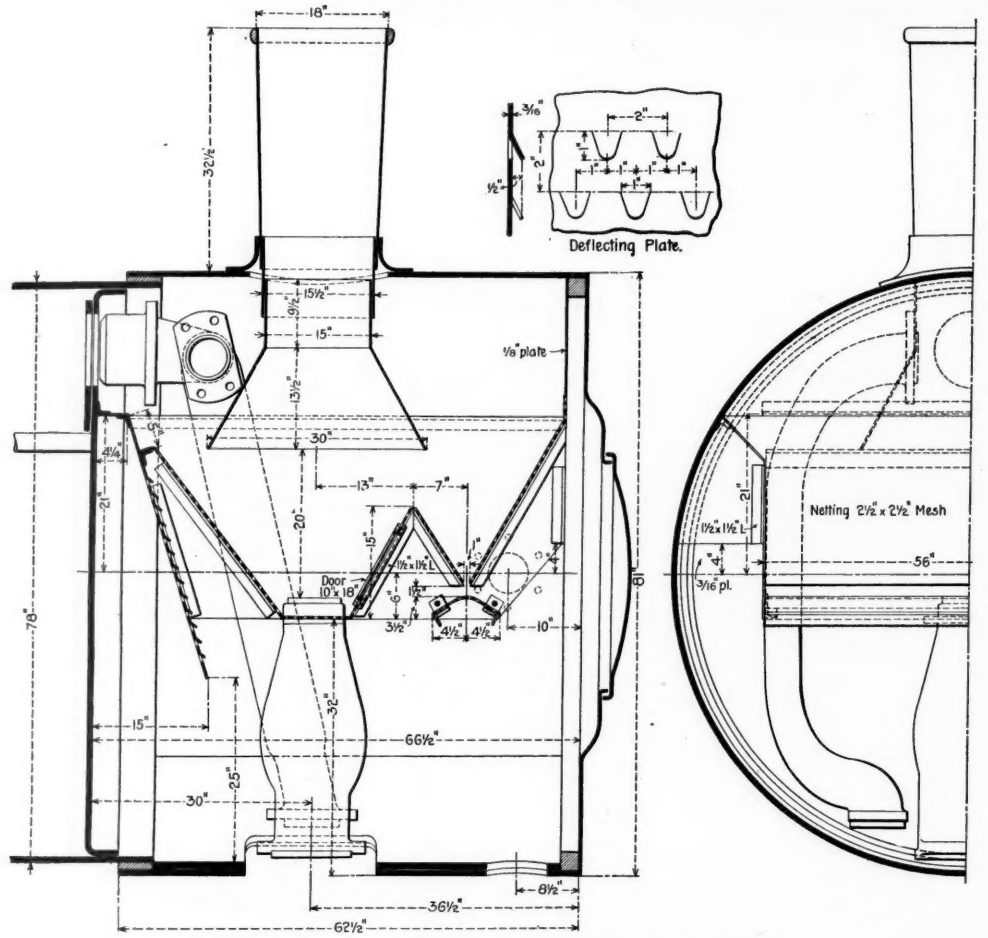
"What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth. But, even upon this basis, we perceive no ground on the record for reversing the decree of the Circuit Court. On the contrary, we are of opinion that as to most of the companies in question there would have been under the rates established by the act of 1893 an actual loss in each of the years ending June 30, 1891, 1892, and 1893, and substantially no compensation earned for the services rendered, and that in the exceptional cases above stated the receipts or gains above operating expenses of some of the companies would have been too small to affect the general conclusion that the act, if enforced, would have deprived each of the railroad companies involved in these suits of the just compensation secured to them by the Constitution. Under the evidence there is no ground for saying that the operating expenses of any of them were greater than necessary."

Railroad Men and Official Manners.

An organization called the German Railroaders' Union was formed in Hamburg some time ago, which last May began the publication of a journal called "The Railroaders' Reveille." This is looked upon as a purely social, democratic organization. Last January a meeting was held in Berlin in opposition to this union, attended, it is said by some 1,000 railroad employees, no others being admitted. This meeting protested against the name assumed by the Hamburg organization, and declared against the propagation of social-democratic theories among railroad men; resolving that the employees had faith that the government, the parliament and the railroad administrations had their interests at heart, and would satisfy their reasonable requirements so far as possible. As more than half of the employees are regularly appointed "officers" (Beamten), sure of constant employment and pensions when superannuated, it seems natural that they should sympathize with the powers that be.

The complaints of employees, it seems, are partly against the high-and-mighty air of their superiors, and the journal of the German Railroad Union, commenting on this meeting and the social propaganda, intimates that a reform in this direction is desirable. It says that the relations between superior and subordinate require special care in these times, to secure mutual understanding and confidence, and that the unapproachable demeanor of some officials generates hostility and bitterness that might easily be avoided. All measures for the benefit of the lower grades of employees fail to make an impression when the men are not treated considerately by their immediate superiors. The dissatisfaction caused by the manners of the immediate superior moreover is likely to extend not to him only but to the whole administration. In promoting a man, regard should be had not only to his ability to perform his duties and his acceptability in dealings with the public, but also to those characteristics which are likely to make him get along agreeably in dealing with his men. Men who lack this qualification should be excluded on principle from places where they have much dealing with subordinates, whatever their other qualifications may be.

All of which may be laid to heart outside of Prussia, and in other than state railroad administrations. Perhaps some (say South Germans or Frenchmen) may say that if the advice is taken to such an extent as to make Prussian official manners agreeable, it will be an achievement as great as any wrought in the economical field by the railroads.



Front End of Twelve-Wheel Locomotives—Great Northern Railway.

Bell Front End for the Great Northern.

The engraving shows an arrangement of front end for some 12-wheel engines of the Great Northern with Mr. Snowden Bell's improved spark arrester. This arrangement follows very closely the design as applied to the Baltimore & Ohio engines shown in the Railroad Gazette of Sept. 10, 1897. There are, however, some peculiarities in the relative proportion of the smokebox and stack, and therefore we give this new arrangement with dimensions in detail.

It will be noticed that the width of the netting has been reduced traversely, the builders expecting thus to get a more uniformly effective draught on the surface of the netting. This, we understand, is the proposition of the Brooks Locomotive Works, who built the engines.

Officers of the Works say that "reports from the Great Northern regarding the steaming qualities of these engines are very encouraging, and the engines went into service without a single change in the exhaust nozzles, netting or position of the diaphragm."

The Operation of Block Signals on a Single Track Railroad.*

There are numerous difficulties in the maintenance and operation of a block system on a single track railroad, that are not encountered on double track and four track lines. We must not only protect trains running in the same direction, but in opposing directions. On the Cincinnati Southern we combine the telegraphic block and the automatic electric. The telegraph block is used for giving telegraphic orders to trains concerning their meeting and passing points, etc., and also for the proper spacing of trains running in the same direction. But in the case of a long distance between stations the second train is held by the telegraph operator until the preceding train has been gone a specified length of time, when it is allowed to proceed and is then governed by the automatic signals. The automatic performs an important function at meeting points; it prevents trains from running by.

Rule 3 of our code provides that when a signal is red before a train enters the block, or is white and does not change to red before the train reaches the signal the train must stop, send a flagman in advance and in rear immediately, wait five minutes after the flagman has started, and then proceed under full control, not exceeding six miles an hour, until the obstruction is reached, or the train passes out of the block. This rule shows the vital difference between the single track and the double track road. On the single track road the red automatic signal is absolute, whereas on double track the signal simply blocks trains a specified length of time. On the single track road the red signal is taken as a warning that a train is approaching the blocked train, and means are at once taken to protect it.

Under rule 4, trains of inferior right approaching a meeting point within the limits of a block, may pass the red signal and proceed to the siding under full control. The train of superior right is stopped at the signal while the train of inferior right runs to the side track under control. The signal serves as a check to the engineman of the inferior train, by reminding him of the meeting point. When following trains are detained outside of the block, each train (by Rule 5) allows the preceding train five minutes to clear the block, and then proceeds under control. With the automatic block the flagging rules should be rigidly enforced, as trains on a single track must protect against opposing, as well as following trains. To facilitate flagging and save delay, all passenger trains carry a three-wheel car in the baggage car. It has suitable brackets for carrying red flags and red and white lights.

On single track we must guard against the danger of two trains, going in opposite directions, both entering the block at the same time and both receiving a safety signal. In an isolated block, a preliminary section of track is electrically connected to the signal of the opposite end of block, the object of this being to have the train set one signal of the block at danger before it sets the other one, when going in one direction. Where block sections are continuous, this preliminary section is called the overlap. The location of these preliminary sections is largely determined by local conditions, such as gradients, curves, etc., the preliminary section being connected to the signal governing trains running down the grade. These preliminary sections extend outside of the block proper from 1,500 to 2,000 ft.

In order to save unnecessary delay when trains are stopped within block limits and it is necessary to send out a flagman, the location of the preliminary section is designated by a small battery chute painted white and situated on the engineman's side as he approaches the block which it governs. The location of the overlap is also designed by large battery wells and relay posts painted white, and the number of the signal controlled by the overlap is painted on this post. The number is located on the opposite side of the post from the signal controlled thereby, so that the engineman, when he sees this number in front of him, understands that when the front truck of his engine passes the numbered post, the signal of that number is set at danger. On the other hand, the flagman understands when the number is seen from rear end, that, as the rear end of the train passes this post,

*A paper read by Mr. W. A. D. Short, of the Cincinnati, New Orleans & Texas Pacific, at the meeting of the Railway Signaling Club, Pittsburg, March 8. (Condensed.) The automatic signals on the Cincinnati, New Orleans & Texas Pacific were described in the Railroad Gazette of November 12 last, page 795.

the signal of that number is released or allowed to go back to safety. With consecutive blocks, the overlap extends about half a mile.

This system of marking enables the trainmen to know what signals they are holding at danger, and the flagman may go back to the proper signal and inform approaching trains as to the cause of the signal being at danger. At all switches bells or annunciators are located; these being placed directly behind the switch stand. These bells warn trains in side tracks when trains are approaching on the main line, and also warn trains in taking the side track as to whether or not they are in so as to clear the main track.

On the Cincinnati Southern, an inspector has, on the average, 14 electric signals, distributed over about 30 miles. The inspector's duty is to visit all of his signals and apparatus every day. He must also keep up all the batteries for signals, crossing alarms and switch annunciators. He must also keep the telegraph line and circuits clear from local disturbances. We use, principally, common gravity batteries. Those of the track circuits are replenished on an average, every 14 days, and the batteries of the line circuits on an average every 42 days. The cost of maintenance per signal per year is about $88.80.

Our principal cause of failures—and one that has not as yet been successfully coped with economically, is lightning. Others are due to cracked battery jars and crossed line wires, both of which are not derogatory to the system, but may be classed as unavoidable. Outside of these, disturbances of the track circuit may be mentioned; loose bonding wires, leakage in underground wires and leakage due to track being covered with mud. Loose rivets may be overcome by using extreme care in driving rivets, seeing that they go in true and are not driven down so far that they will rebound. The hole for the rivet should be drilled far enough from the edge of the flange of the rail to prevent the rivet from coming through the flange and thus coming in contact with a tie when ties are respaced or when rails creep. Bonding wires should be placed between angle plates and web of the rail. Thus they are fully protected and are entirely out of the way of trackmen.

When the signals were first erected, all the underground wires, of any one track section, were put in the same groove of grooved lumber. This was found to be very detrimental, as the leakage would form a short circuit, the relays would remain demagnetized and the signal stand at danger. At certain points in extreme wet weather, this underground leakage would cause the relay to remain magnetized and the signal to stand at safety when train had entered the block, the battery of one section leaking into the circuit of the other. This can be overcome in three ways. The first and best method is to replace all underground lumber and provide a separate groove for each wire, making the lumber as weather proof as possible, by thoroughly painting with an insulating compound, or with asphaltum. The second method and best for emergencies, is to place in the circuit a relay of a higher resistance than the one in service, thus increasing the resistance of the circuit to which the current from a lower resistance circuit is leaking. The third method is to use lead covered wire for all underground work. Ordinary insulated wire is not impervious to the action of water and clay, as the insulation soon decays and falls off. This seems to be the case, especially in damp (clayey) limestone soil, the chemical action probably developing a calcium hydrate, which tends to decompose the braiding and rubber that constitute the insulation of the wire. When lead-covered wire is used, it is not necessary to run this wire in grooved lumber the whole distance, but only where the wire runs through the ballast. The wire outside of ballast line may simply be laid in a trench in the ground. This makes a great saving. For an insulated joint, a joint like the "Weber insulated joint" gives excellent results. It holds the track in line and surface far better than wooden splice bars, and end posts do not cut out anywhere near as quickly. The insulating properties of this kind of joint are theoretically not as good as the old wooden splice bars, but for all practical purposes, they give excellent results.

The Electric Train Staff.

This is an excellent method of handling traffic over a single track where trains are numerous and the speed rate is low. The staff is a key to unlock the levers which operate the semaphore blades, and takes the place of, and has the same effect as, a written train order, as the possession of the train staff by the engineman, conductor, or both, gives to them the absolute right of track through the block against all trains. When the staff has been withdrawn from one instrument, another cannot be withdrawn from either instrument until the staff previously removed has been placed in the same instrument, or in the instrument at the opposite end of the block. The staff machine is a mechanically operated machine that is unlocked electrically. When the magnets of the machine are energized, they attract a locking dog which releases the staff and allows it to be taken out. The action of taking the staff from the machine reverses the current governing that machine, and the one at the far end of the block, doing this by a series of cam movements so that the currents of both machines work against each other and the magnets of neither can be energized, as the currents at each end of the block are of the same polarity. The replacing of the staff in either machine causes the current to flow through its normal course. We have the permissive attachment, allowing trains to follow one another up to the number of 7 sections, by giving a tablet to each train instead of the staff. There is only one permissive staff, and when this is withdrawn from the machine, it is used as a key to unlock a box on the side of the machine which contains the tablets. There are six of these tablets, and they are made of ¼ in. cast iron about 7 in. long by 1½ in. wide. It is necessary that all the tablets and the staff be inserted in the same machine before another staff can be withdrawn from either. Withholding any of the tablets, causes the currents to remain reversed and prevents the permissive staff from being inserted in the machine on account of the dropping down of the locking dogs. This permissive attachment is never used for passenger trains. Enginemen of light engines are given the full staff; passenger, freight and work trains receive the divided staff. That is, half of the staff is given to the engineman and the other half to the conductor or foreman of the train. The object of the divided staff is to make absolutely sure that the whole train has passed out of the block limits when the staff is delivered to the operator, it being, of course, necessary to replace a whole staff in one of the machines before another can be withdrawn. The staff is constructed in two pieces, one end consisting of a brass projection with a small iron pin on one side, and the other end consisting of a sleeve with a groove running half around one side and straight down the centre, to receive the pin * * *.

Train Accidents in the United States in January.

COLLISIONS.

Rear.

2d, 2 a. m., on Baltimore & Ohio, at Queen City, passenger train No. 10 standing at the station was run into at the rear by passenger train No. 4, badly damaging one sleeping car. Two employees at work under the cars of No. 10 were injured.

4th, 1 a. m., on Wabash road, at Mitchell, Ill., a freight train standing at the station was run into at the rear by a following freight, and the engine, caboose and 10 cars were wrecked. A drover was injured. It is said that the foremost train neglected to send out a flag.

4th, on Atchison, Topeka & Santa Fe, at Argentine, Kan., a freight train entering a side track was run into at the rear by a following freight, wrecking the caboose and 5 cars of live stock. The second train was running at high speed, and it is said that the engineman was asleep. A drover in the caboose was killed and 4 others were injured.

4th, on Columbus, Sandusky & Hocking, at Drake's, O., a freight train with an engine at the rear, while standing at the station, was run into by a following freight, damaging 2 engines and several cars. One engineman was injured. It is said that the standing train failed to properly protect itself by signals.

10th, on Delaware & Hudson, near Waterford, N. Y., a passenger train ran over a misplaced switch and into some freight cars standing on a side track, and the engine was overturned. Four trainmen were injured.

10th, on Lake Erie & Western, near Muncie, Ind., a passenger train ran into a platform car loaded with steel rails, badly damaging the engine and mail car. Four passengers and one trainman were injured. It is said that the freight car had been "lost" from a switching train.

12th, on Philadelphia & Reading, near Shamokin, Pa., a small locomotive, carrying a paymaster, ran into the rear of a preceding freight train. One employee was injured.

12th, on Kansas City, Memphis & Birmingham, near Jonesboro, Ark., a freight train ran into the rear of a preceding freight, badly damaging the engine and 8 cars. The engineman jumped off and was injured. It is said that the foremost train was not properly protected by flag.

13th, on Mobile & Ohio, at Wahalak, Miss., a freight train ran over a misplaced switch and into some cars standing on the side track, making a bad wreck. The fireman was killed and 2 other trainmen were badly injured.

14th, on Long Island road, at Linwood, N. Y., a passenger train ran into the rear of a preceding passenger train, doing slight damage. One passenger was injured.

15th, on Chicago, Milwaukee & St. Paul, at Big Wausaukee, Wis., a freight train, which had stopped to do some switching at a lumber yard, was run into at the rear by a following freight and 3 cars were ditched. The engineman jumped off and was injured.

17th, on Missouri Pacific, at Hope, Kan., there was a collision of freight trains opposite the passenger station and the station building was wrecked. The building and 3 cars caught fire and were burned up. Three trainmen were injured.

18th, on West Shore road, near Webster's, N. Y., a freight train descending a grade broke in two and the rear portion afterward ran into the forward one, wrecking 5 cars. A brakeman was injured.

21st, 4 a. m., on Texas & Pacific, near Grand Saline, Tex., a freight train descending a grade broke in two and the rear portion afterward ran into the forward one, wrecking several cars. The engineman, one fireman and one brakeman were injured, the engineman fatally. All three were severely burned.

23d, 4 a. m., on Chicago, Rock Island & Pacific, at Clay Center, Kan., a freight train ran into the rear of a preceding freight; 5 trainmen injured, 3 of them fatally.

24th, on Minneapolis, St. Paul & Sault Ste. Marie, at Lucca, N. D., a freight train broke in two and the rear portion afterward ran into the forward one, and several cars were wrecked. A brakeman was injured.

24th, on Lake Shore & Michigan Southern, at 48th street, Chicago, a passenger train ran over a misplaced switch and into a freight train moving on the side track; one passenger injured.

24th, on Erie road, at Ashland, O., a freight train broke in two, and the rear portion afterward ran into the forward one, wrecking 9 cars. A brakeman was killed.

25th, on Baltimore & Ohio, at Black Hand, O., a passenger train ran into the rear of a preceding freight, wrecking the engine, caboose and one freight car. The engineman was injured.

26th, on West Jersey & Seashore, at Chesilhurst, N. J., a freight train broke apart in two places, and the middle portion, having stopped, was run into by the rear portion, damaging 4 cars. A brakeman was badly injured.

27th, 5 a. m., on Yazoo & Mississippi Valley, at Estill, Miss., a freight train approaching a station and running at reduced speed was run into at the rear by a following freight, and the caboose was damaged. One passenger was killed and a brakeman was injured. The caboose took fire and was partly burned up.

31st, 8 p. m., on Fitchburg road, near Shelburne Falls, Mass., a west-bound passenger train ran into the rear of an engine pushing a snow plow, and 4 trainmen were injured. The snow plow and both engines were wrecked.

And 33 others on 24 roads, involving 9 passenger and 44 freight and other trains.

Butting.

5th, 1 a. m., on Kansas City, Ft. Scott & Memphis, near Paola, Kan., butting collision between a freight train of the Kansas City, Fort Scott & Memphis and one of the Missouri, Kansas & Texas, both loaded with live stock and both runnling at good speed. Both engines were wrecked and fell into the ditch. Four trainmen and one drover were injured.

5th, 5 a. m., on Union Pacific, near Kansas City, Kan, butting collision between a west-bound work train and an eastbound stock train of the Rock Island road, badly damaging both engines. Both enginemen and both firemen were injured. There was a dense fog at the time.

6th, on Baltimore & Ohio Southwestern, near Pleasant Plain, O., collision between an eastbound and a westbound freight, wrecking a caboose and 8 cars. An engine was everturned. A brakeman was injured.

12th, 4 a. m., on Detroit, Grand Haven & Milwaukee, at Fowler, Mich., butting collision of freight trains, badly damaging both engines and several cars; 2 trainmen injured.

15th, on Chesapeake & Ohio, near Brooks, W. Va., butting collision of freight trains, wrecking 10 cars. One brakeman was killed. The westbound train was standing at the end of the double track, and it is said that the eastbound ran into it in consequence of a clear signal being given which did not correspond with the position of the switch.

20th, on Toledo, Peoria & Western, at Farmdale, Ill., butting collision between a passenger train and a freight, wrecking the baggage car; 4 passengers and 2 trainmen were injured.

21st, on Northeastern of South Carolina, near Ashley Junction, S. C., butting collision between southbound passenger train No. 37 and northbound passenger train No. 52. Both firemen were killed and four other trainmen were injured, one of them fatally. There was a dense fog at the time.

25th, 2 a. m., on Louisville & Nashville, near Upton, Ky., butting collision of freight trains, wrecking the engines and 18 cars. One engineman, one brakeman and one tramp were killed, and 3 trainmen and a telegraph repairer were injured. It is said that the southbound train ran past a station at which it had been ordered to wait for the northbound.

25th, 4 a. m., on Missouri, Kansas & Texas, at Peck, I. T., butting collision of freight trains, damaging the engines and 5 cars; 2 trainmen injured.

25th, on Illinois Central, at Albernet, Ia., butting collision between a passenger train and a freight train standing at the station. One fireman was killed and 2 other trainmen were injured. There was a blinding snowstorm at the time.

25th, on Missouri, Kansas & Texas, near Atoka, I. T., butting collision of freight trains, wrecking both engines and 7 cars. A brakeman was injured. It is said that the engineman of the northbound train had fallen asleep.

28th, on Pennsylvania road, at Jamestown Junction, N. J., butting collision between a passenger train and a freight, overturning one of the engines. One engineman and 2 passengers were injured.

29th, on Chesapeake & Ohio, at Gauley, W. Va., butting collision of freight trains, damaging both engines and 7 cars. A brakeman was killed. The eastbound train was standing at the station and the westbound approached at uncontrollable speed, though Gauley is a block station, and, besides, the engineman knew of the eastbound train.

31st, on Philadelphia & Reading, at Lofty, Pa., butting collision of freight trains, making a bad wreck; 3 employees injured.

31st, on Philadelphia & Reading, at Ryan's Tunnel, Pa., butting collision of freight trains, badly damaging both engines. Three trainmen were injured.

And 11 others on 10 roads, involving 5 passenger and 17 freight and other trains.

Crossing and Miscellaneous.

5th, 6 a. m., at Copemish, Mich., a log train of the Ministee & Northeastern, standing on the crossing of the Ann Arbor road, was run into by a caboose and 12 freight cars which had broken loose from an Ann Arbor freight train ascending a grade 4 miles east of Copemish. The runaway cars were moving at very high speed and about one-half of them were completely demolished. Three trainmen were injured, one of them fatally.

5th, on Atchison, Topeka & Santa Fe, at Fairmount, Kan., a freight train entering a side track was allowed to run at uncontrollable speed and struck the side of another freight, wrecking the caboose and 3 freight cars. The engineman was injured.

6th, on Manhattan Elevated, Third Avenue Line, at 98th street, New York City, a passenger train approaching the station ran past the platform, the speed not being properly controlled, and collided with a switching engine which was just leaving the main track. The switching engine was pushed around so that it stood at right angles to the track.

6th, 8 p. m., on Kansas City, St. Joseph & Council Bluffs, at St. Joseph, Mo., a passenger train ran into a freight train in the yard, wrecking both engines. One engineman and one fireman were injured. There was a dense fog at the time.

10th, on Lehigh Valley, at East Buffalo, N. Y., an empty engine ran over a misplaced switch and collided with a switching engine standing on the side track. The engineman and fireman of the switching engine were fatally injured.

11th, at Memphis, Tenn., a switching freight train of the Kansas City, Ft. Scott & Memphis became uncontrollable on a steep grade leading to the river front and collided with some freight cars standing on the track at the foot of the grade, making a bad wreck. Two tramps were injured.

12th, on Long Island road, at Jamaica, N. Y., collision between passenger trains 83 and 158, due, it is said, to a misplaced switch. One of the conductors was badly injured.

12th, on New York Central & Hudson River, at Mott Haven, N. Y., a south bound passenger train collided with a work train on a crossover track, wrecking the tender and caboose of the work train and damaging the engine. One trainman was injured. There was a dense fog at the time, and it appears that the passenger train ran past both a distant and a home signal which were against it.

12th, on Western of Alabama, at Cliatts, Ala., a passenger train ran into a freight which was entering a side track, wrecking several cars. The engineman was injured.

16th, on Chesapeake & Ohio, near Hinton, W. Va., collision of freight trains, killing a brakeman.

16th, at Orrville, O., a passenger train of the Cleveland, Akron & Columbus ran into a freight car on the track leading to the Pittsburgh, Fort Wayne &

Continued on page 181.)

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

There was a few years ago apparently actually some apprehension that India might deprive this country of a market for its wheat. This was not so much because India had in several years exported as much as 40,000,000 bushels as because it was thought it might increase this exportation several times, as its railroad system was extended. We endeavored to show that a country of nearly 300 million people, which had always multiplied close up to the famine point, and sometimes far beyond it, was not likely to spare any great quantity of food. The last Indian railroad report gives statistics of the total estimated wheat production, as well as the exportation, for seven years. According to these the largest production was about 270 million bushels, in 1893, and the largest exports 52½ millions, in 1891. In the latter year, a little more than one-fifth of the crop was exported; in 1893, when the crop was largest, only 8 per cent. of it; in 1894, with the crop next to the largest, 5.6 per cent.; less than 8 per cent. of another very large crop in 1895, and but 2⅛ per cent. of the scanty crop of 1896, when there was famine. The exports for the years ending with March for the seven years ending with 1896 have been 25½, 52½, 34½, 21½, 14½, 20 and 4¾ million bushels, respectively. The small exports from the small crop prove nothing, but decreasing exports from the large crops of the three previous years indicate that India on the average will consume nearly all the food it can grow. It must be remembered that wheat is the only important grain export from India, but only a small part of the grain consumed at home, as is evident from the fact that its largest crop was less than a bushel per head of population. This is further shown by shipment of 7,402,826 tons of grain of all kinds and seeds over the Indian railroads in 1896, only 1,009,269 tons of which were wheat.

The Railroads and Federal Laws.

The Joint Traffic Association suit is at last before the United States Supreme Court, and a decision will probably be forthcoming before long. The associated press abstracts of the arguments printed in our last issue are very brief, but they indicate that the issues have finally been pretty well clarified, and that, therefore, a decision may be expected on the merits of the case from a legal point of view. We say legal point of view because we are forced to the conclusion that, thus far, the status of the railroads, as related both to the anti-trust law and to the question of legalizing pooling, has not been considered by the courts from the point of the highest ultimate public good. Justice Peckham's decision in the Trans-Missouri case is confessedly based on a strict construction of the crude and inflexible anti-trust law of 1890, passed by Congressmen who knew that they were trying an experiment, and Judge Wheeler's decision of the Joint Traffic case was too brief to settle such an important controversy.

A settlement now, made on a narrow legal basis, is likely to defeat justice. If the railroads lose this suit it will be from one or both of two simple causes. First, the Supreme Court will be reluctant to reverse its own record in the Trans-Missouri Association case. That Association was condemned in spite of clauses in its agreement which allowed each company to maintain its connection with the Association by means of ties very easily breakable. In the Joint Traffic Association these ties are still more loosely constructed; in fact, it may be said that they are not ties in the usual sense, but are simply the material for making a tie whenever it may be found desirable to make one. Every time the Managers promulgate a rate each company may or may not adopt that rate. This peculiar arrangement is due to the fact that in making this agreement the anti-trust law was had in view (as it was not in the case of the Trans-Missouri agreement) and care was taken not to infringe it. But it is doubtful if a majority of the Supreme Court will discover a distinction between the two agreements in this respect. The change in the constitution of the Supreme Court since the Trans-Missouri case was decided is not favorable to a change in the attitude of the court, for the member who has retired, Justice Field, was one of the four who dissented from that decision. If the new justice takes the same view that Mr. Field did, he does not change the almost even balance of the court, while if he sides with the majority he strengthens that side.

Secondly, the Association may lose its case because its constitution (the agreement) depends so largely upon the motives of the men who signed it. To know motives you must know well the men. At the same time, courts do take motives into account, where other considerations are evenly balanced; and, not knowing the litigants, they necessarily base their opinions on what they read in the record. The Joint Traffic agreement is unique. It may be looked upon as an open statement that the railroads will cut as near as they dare to the prohibitions of the law; and lawyers, judges and all find themselves unable to believe that this is a sincere statement of law-abiding men. Yet the agreement instructs the officers of the Association not to disobey the law, and there has not appeared in the whole of the two years since the Association was formed any shadow of evidence that any man or company had made a mental reservation to disregard this clause of the agreement.

It is true that certain parties to the agreement appear to have been violators of the law forbidding secret rates, but those who insist that the Association is intended to do illegal acts forget that whenever a railroad breaks a plain criminal law it goes about it in the same way that individuals generally do; it keeps its own counsel. The fact that the Joint Traffic Association is virtually a public body is a warrant that it will not violate the law-abiding professions of its own constitution. But the Government's counsel virtually argues that the clause instructing the management to disobey the law is merely a formality, having no force, and the lawyers on the bench, judging by what seems to be preponderance of evidence, may agree with him.

We may grant, for the sake of argument, that individual companies intend to violate the anti-pooling law, or to disregard the Interstate Commerce law in some way; but there is nothing in the machinery of the Association that will assist them in carrying out their purpose; and, in point of fact, those violations of the law by Association roads which have become known during the past twelve months have been flagrant evasions of the letter and spirit of the Association agreement. The violation of the letter of the agreement seems to have consisted primarily in the failure to promptly inform fellow members of intended reductions of rates, a matter of which the law takes no notice either way; but the most obvious feature of the violation of the spirit of the agreement has been the disregard of publicity of rates, a point in which the Association and the law are in perfect accord. No one, not even the Government lawyers, will for a moment deny that a main purpose of the Association is to secure publicity of rates; and it is most obviously true that in so far as it has accomplished this it has worked for the public good and has strengthened the law. Whatever the sins of individual roads, there is no doubt that the Association was designed to constitute, and if carried out, does constitute, a powerful instrumentality by which law-abiding roads can more effectively control the law-breaking roads.

But we did not set out to argue a case which is already closed. We merely note a few preliminary facts to be kept in mind when the decision comes out. A more profitable theme for present consideration may be found in the decision of Judge Taft and his associates in the Iron Pipe case, reported in our last issue, page 162. The exceptions quoted (near the top of the third column), are epitomized in language which, it seems to us, exactly fits the conditions that exist in connection with pooling or other agreements which railroads enter into for the purpose of partially restraining competition. Judge Taft says that a contract in restraint of trade must be clearly ancillary to a main contract which is indisputably unobjectionable. In the case which he cites, the covenant in partial restraint of trade "is inserted in the contract only to protect one of the parties from the injury which in the execution of the main contract he may suffer from the unrestrained competition of the other." But in another case, there is no main lawful purpose to subserve in which partial restraint would be permissible," and so the restraining agreement is condemned.

Railroad pools are always merely partial restraints. "Always" is a strong word, but we believe it to be fully justified, at least in America. The first function of a railroad is to carry the traffic which seeks its line as a first choice, and every railroad agreement to apportion traffic deals with only a small portion of any company's business. (Attempts at such agreements, without pools, have been common enough under the present law, as well as before its passage, so that we do not need to go back ten years for instances.) Mr. Blanchard has estimated that not over five per cent. of the freight traffic of the Joint Traffic lines was ever the subject of apportionment negotiations. Adopting the language of the decision quoted above, we may say most emphatically that pools of railroad earnings in this country would be partial restraints of competition (for a limited traffic) for the purpose of facilitating the efforts of the competitors to accomplish their "main lawful purpose" of cheaply and efficiently conducting the much larger traffic not pooled. We will not take the time of the reader to elaborate this idea, but it is safe to say that 99 out of every 100 railroad officers who have surveyed the field in the light of experience entertain a strong conviction that the hoped-for good effect of pools would not only be partial, but in many cases most discouragingly so—from the stockholder's standpoint. But here, again, we are dealing with questions which seem to hinge on men's motives; and it will be harder to argue with Congress than with the Supreme Court.

January Accidents.

Our record of train accidents in January, given in this number, includes 113 collisions, 130 derailments and 14 other accidents, a total of 257 accidents, in which 48 persons were killed and 180 injured. The detailed list, printed on another page, contains accounts only of the more important of these accidents. All which caused no deaths or injuries to persons are omitted, except where the circumstances of the accident as reported make it of special interest.

These accidents are classified as follows:

COLLISIONS.	Rear.	Butting.	Crossing and other.	Total.
Trains breaking in two	17	0	0	17
Misplaced switch	5	0	3	8
Failure to give or observe signal	10	3	3	16
Mistake in giving or understanding orders	0	4	0	4
Miscellaneous	9	6	11	26
Unexplained	14	13	15	42
Total	55	26	32	113

DERAILMENTS.

Broken rail	3	Misplaced switch	5
Loose or spread rail	4	Derailing switch	4
Defective bridge	1	Runaway train	1
Defective switch	1	Bad switching	1
Defective frog	1	Animals on track	3
Broken wheel	3	Landslide	3
Broken axle	14	Snow	1
Broken truck	7	Accidental obstruction	3
Fallen brakebeam	2	Unexplained	66
Broken car	4		130
Failure of drawbar	2		
Failure of brakechain	1		

OTHER ACCIDENTS.

Boiler explosion	2	
Broken side rod	2	
Cars burned while running	2	
Various breakages of rolling stock	7	
Other causes	1	
		14
Total number of accidents		257

A general classification shows:

	Collisions.	Derailments.	Other accid's.	Total.	P. c.
Defects of road	0	10	0	10	4
Defects of equipment	17	33	11	61	24
Negligence in operating	54	11	2	67	26
Unforeseen obstructions	0	10	1	11	4
Unexplained	42	66	0	108	42
Total	113	130	14	257	100

The number of trains involved is as follows:

	Collisions.	Derailments.	Other accid's.	Total.
Passenger	44	18	9	71
Freight and other	157	116	5	278
Total	201	134	14	349

The casualties may be divided as follows:

	Collisions.	Derailments.	Other accid's.	Total.
Killed:				
Employees	20	16	3	39
Passengers	2	4	0	6
Others	1	2	0	3
Total	23	22	3	48
Injured:				
Employees	70	33	2	105
Passengers	19	52	1	72
Others	3	0	0	3
Total	92	85	3	180

The casualties to passengers and employees, when divided according to classes of causes, appear as follows:

	Pass. Killed.	Pass Injured.	Emp. Killed.	Emp. Injured.
Defects of road	0	4	2	2
Defects of equipment	0	1	4	12
Negligence in operating	2	19	21	73
Unforeseen obstructions and maliciousness	0	17	3	4
Unexplained	4	31	9	14
Total	6	72	39	105

Twenty-nine accidents caused the death of one or more persons each, and 50 caused injury but not death, leaving 178 (69 per cent. of the whole) which caused no personal injury deemed worthy of record.

The comparison with January of the previous five years shows:

	1898.	1897.	1896.	1895.	1894.	1893.
Collisions	103	51	50	55	41	104
Derailments	130	68	78	67	69	157
Other accidents	14	7	5	7	6	12
Total accidents	257	126	133	129	116	273
Employees killed	39	26	40	23	16	38
Others killed	9	7	7	9	28	11
Employees injured	105	58	68	54	49	170
Others injured	75	42	51	46	80	159
Passenger trains involved	71	55	45	45	51	105
Average per day:						
Accidents	8.29	4.06	4.29	4.16	3.74	8.81
Killed	1.55	1.06	1.52	1.03	1.42	1.58
Injured	5.80	3.23	3.84	3.93	4.16	10.61
Average per accident:						
Killed	0.18	0.26	0.35	0.24	0.37	0.17
Injured	0.70	0.79	0.89	0.76	1.11	1.20

The most fatal passenger train accident in January was that at Orono, Me., on the 29th, the cause of which has not yet been determined. In this derailment four passengers were killed. The other two passengers killed were riding in freight trains. The butting collision of passenger trains near Ashley Junction, S. C., is said to have been due chiefly to the fact that the south-bound Florida special was two or three minutes ahead of time at a meeting point. The disaster at a bridge near Shorter's, Ala., was due to no fault in the bridge or roadway.

At Madison, Wis., on the 24th, a locomotive standing in a roundhouse blew up, and three employees were killed.

We find reports of only 13 street-car accidents in January, and of these five resulted in no damage to life or limb. There was one butting collision, due to disregard of the rules for meeting on single track, in which one person was killed and two were injured. No other accident resulted fatally, and the total number of injuries in all the accidents was 13.

The passenger rate war that the Canadian Pacific is now waging against the railroads of the United States has started up the Congressmen and others who for years have been trying to make the Canadian Pacific a political issue, and in the Senate at Washington, on March 2, there was a warm debate in connection with the Homestead and railroad laws for Alaska, in which the abrogation of the bonding privilege was again demanded. Senator Elkins, of West Virginia, said that, while he did not frame the famous Section 22 of the present Tariff law, he "stood squarely with the sterling American who did frame it." The demand for a protective law (which should enable the American roads to more effectively compete with the Canadian Pacific by restricting the latter's facilities for getting right across the line) was promptly met by the usual argument that American citizens would thereby be injured. Senator Nelson, of Minnesota, said that this country had other interests than those of the railroad lines. "At the further end of Lake Superior there is located a great empire of five or six millions of farmers, and the interests of those farmers are of far higher consideration than are the interests of the railroads, however important they may be to their owners." The Canadian Pacific had brought to these farmers a reduction amounting to an average of 10 cents a bushel on the transportation of their products to the Atlantic seaboard. In connection with this agitation, a statement has been published, prepared by the Treasury Department, showing the aggregate quantity of merchandise shipped from one point to another in the United States, through Canada, for the year 1897. This statement shows a total of 5,351,350 tons, three-fifths of which consists of agricultural and animal products. The remainder is made up of products of mines, products of forests, manufactures and miscellaneous. The points at which these shipments entered Canada (or were recorded by the customs officers) are shown in the following table:

Bangor, Me	1,359	Ogdensburg, N. Y..	25,215
Portland, Me	28,367	Susp'n Bridge, N. Y.	779,227
Island Point, Vt.	68,691	Detroit, Mich	2,590,867
Newport, Vt	7,871	Huron, Mich	1,265,264
Richford, Vt	52,671	Pembina, N. D.	20,275
St. Albans, Vt.	130,261		
Buffalo, N. Y.	381,237	Total	5,351,350

It will be observed that this statement does not include the traffic which the Canadian Pacific is most loudly complained of for taking, that to and from Asia, via Vancouver. Indeed, the larger share of the freight shown in this table seems to have made but a short journey through Canada (between Detroit and the Niagara River) and a good share of it went over a road owned cheifly by Americans, the Michigan Central. The political warriors would better have had this report suppressed.

The Belgian State Railroads in 1895 earned per train-mile an average of $1.74 from freight trains and only 71 cents from passenger trains, a natural result of very low rates for passengers and comparatively high ones for freight, the average train-load having been 136 tons, and 70 passengers. The latter is greater perhaps than on any railroad system of this country, but with the average fare as low as 0.95 cent per mile it yields small returns. The regular rates are very low in Belgium, but there are numerous reduced rates, including season tickets for students, workmen, etc., and nearly four-fifths of all the passengers are carried at these reduced rates. In 1895 more than 21,000,000 trips were made on workmen's tickets, at an average cost of less than 2½ cents per trip. The average per trip on students tickets was 2.85 cents, the average journey being nine miles for the workman and eight for the student.

The Belgian State Railroads in 1895 had a staff of 45,150 men to work their 2,063 miles of road, or nearly 22 per mile of road. The heavy traffic and the short hauls require a large staff, but this seems a very liberal one. The private railroads in Belgium have a little less than 14 men per mile of road; but the State lines, with 2½ times as much road, have nearly four times as great a train mileage, and the number of train-miles per employee was 595 on the State and 609 on the private railroads. In this country in 1895 there were 977 train-miles per employee.

TRADE CATALOGUES.

Fencing.—The new catalogue of the Page Woven Wire Fence Company, of Adrian, Mich., is worth examining and preserving for reference. Most wire fences are uncomely, or soon become slack and untidy. Few of them are permanent barriers to large and small stock and at the same time safe barriers. The Page system is rectangular; the laterals are made of hard steel coil spring wire, having great elasticity, so that when the fence is put up and strained taut on firm posts it always remains taut and in line. A heavy man can climb an 8-ft. high Page fence without distorting it. The photographic reproductions of different forms and uses are interesting. A park fence 88 in. high on posts 66 ft. apart; a 58-in. rabbit and stock fence, with the lower laterals only 1 in. apart; a cemetery fence which has quietly performed its function since 1888—reminding one of James Fisk, Jr.'s discovery that it is not needed because "the insiders won't try to get away and the outsiders don't want to get in."

The Page fence depends for stability almost entirely on its end and corner posts, while others require more careful and expensive intermediates. It is so effective and economical that it is stated to be in use on most of the American railroads. This company's output for 1897 of woven wire fence was greater than that of all the others combined.

Wire Fence.—A new catalogue of the McMullen Woven Wire Fence Company, Chicago, contains, besides descriptions of the several well-known types of wire fence manufactured, illustrations showing a new spiral spring steel fencing which is made in five different sizes ranging from 73 in. to 54 in. high; the former has 14 horizontal wires, while the latter size has 8 wires. The top wire is No. 7, the intermediates are No. 11, while the bottom wire is No. 9; all being curved spirally to provide for expansion and contraction. The cross ties are quite large, all being of No. 12 wire. All wires entering into the construction of the fence are double galvanized.

Twist Drills and Other Machinists' Tools.—The Morse Twist Drill & Machine Co. of New Bedford, Mass., sends a catalogue of 80 pages, giving illustrations and price lists of twist drills, reamers, milling cutters, taps, dies, etc. It is a very complete catalogue of the specialties made by this well known concern and is worth sending for. Among the newer tools to which attention is called are: Three groove chucking reamers, hollow drills, Morse taper shank drills with oil tubes and straight shank drills with oil tubes, expanding reamers, face grinding machine, bench center, counterbore and countersink, milling cutters and tapes and dies.

"Air Compressors."—The Ingersoll-Sergeant Drill Co., Havemeyer Building, New York City, has issued a little pamphlet designated as Form 137, containing illustrations of 11 types of Ingersoll-Sergeant air compressors, with a list of some of the users of the different machines. A number of the compressors have only recently been made standards of the Ingersoll-Sergeant Company. Two of these, the Class H and Class J compound air compressors, were illustrated in our issue of Feb. 11.

Train Accidents in the United Staies in January.

(Continued from page 179.)

Chicago, damaging the engine and the baggage car. The engineman was injured.

20th, on Lehigh Valley, at Delano, Pa., collision between a passenger train and a freight, injuring one passenger.

22d, on Wheeling & Lake Erie, at Smithville, O., a freight train standing on a side track was run into by another freight, derailing several cars. One engineman was injured.

31st, on Winconsin Central, at Gray's Lake, Wis., two engines going to help a freight train out of a snow bank, collided with a freight train, making a bad wreck. One engineman was killed and a fireman fatally injured.

And 18 others on 17 roads, involving 8 passenger and 24 freight and other trains.

DERAILMENTS.

Defects of Roadway.

17th, on Missouri Pacific, near Prosser, Neb., a mixed train was derailed by a broken rail and 3 passengers were injured.

23d, 2 a. m., on Louisville, Evansville & St. Louis, at New Albany, Ind., a freight train broke through an iron trestle on viaduct and the engine and one car fell into the water below. The conductor and one brakeman were killed and the engineman and fireman injured. The foundation of the bridg e had been submerged by a flood in the Ohio River, and it is supposed that the supports had been knocked out of position by derelict boats driven against it by the gale.

28th, on Port Jervis & Monticello, near Gilman's, N. Y., passenger train No. 3 was derailed by a broken rail and one passenger was injured.

And 7 others on 7 roads, involving 1 passenger train and 7 freight and other trains.

Defects of Equipment.

8th, on Chattanooga & Lookout Mountain, near Chattanooga, Tenn., a work train descending a steep grade became uncontrollable in consequence of the failure of a brake chain, and several cars fell down a bank. Eight employees were injured.

14th, on New York, New Haven & Hartford, at West Farms, N. Y., a freight train broke in two and the sudden stoppage of the front portion of the train by the automatic application of the air brakes derailed several cars, blocking both main tracks. A brakeman was injured.

22d, on Wheeling & Lake Erie, at Fremont, O., a car in a freight train broke down and several cars were derailed and wrecked. A brakeman was fatally injured.

27th, on New York, Chicago & St. Louis, near Lake View, N. Y., the engine and 4 cars of a freight train were derailed by the breaking of a wheel; and the main track, as well as the main line of the Western New York & Pennsylvania road was blocked for several hours. A brakeman jumped off and was injured.

And 29 others on 18 roads, involving 2 passenger and 27 freight and other trains.

Negligence in Operating.

5th, on Boston & Albany, at Warren, Mass., several cars of a milk train, being backed into a shed, were run at uncontrollable speed and the caboose and 3 cars were wrecked. The wreck took fire from the stove in the caboose and, with the shed, was burned up. A brakeman was injured.

7th, 1 a. m., on Chicago & Grand Trunk, at Harvey, Ill., a freight train was derailed by running over a misplaced switch, and 8 cars were wrecked. A part of the wreck and a passenger car standing near by were burned up. The fireman was killed and 2 other trainmen were injured.

And 9 others on 8 roads, involving 2 passenger and 7 freight and other trains.

Unforeseen Obstructions.

4th, on Cincinnati, New Orleans & Texas Pacific, near Harriman, Tenn., freight train No. 31, drawn by two engines, was derailed by a stone which had fallen upon the track, and both engines and a dozen cars were wrecked. One engineman and one fireman were killed and a brakeman was injured.

9th, on Western of Alabama, near Shorter's, Ala., passenger train No. 35, running at 55 or 60 miles an hour, was derailed on the bridge over the Cupiahatchee River and one passenger car fell through into the creek below. Twenty-one persons were injured, most of them being the pasengers in this car. The conductor was fatally injured, 2 pasengers seriously and 15 passengers and 3 trainmen less severely. The train was running with a sleeping car next to the engine and two coaches next behind the sleeper. The engine struck a mule just as it entered the bridge and the carcass of the mule, striking the bridge truss, was thrown back under the wheels of the second car. The engine and first car got over safely and the second car, though pulled off its trucks, remained on the bridge. The bridge was of three spans, combination, wooden and iron, and each span was 130 ft. long. The first span was wrecked and the second one was so badly damaged that it had to be rebuilt.

And 8 others on 7 roads, involving 2 passenger and 6 freight and other trains.

Unexplained.

1st, on New York Central & Hudson River, at North Tonawanda, N. Y., a freight train of the Lehigh Valley was derailed and the fireman was injured.

3d, on South Atlantic & Ohio, near Phillips Switch, Va., a freight train was derailed and the engine and several cars fell down a bank. The engineman was badly injured.

12th, on Southern Pacific, near Del Rio, Tex., a freight train was derailed and 14 cars were wrecked. Two trainmen were killed.

14th, on Plant System, at Snowdoun, Ala., a car

in a freight train was derailed and several cars were wrecked. Two tramps were killed.

15th, on Southern Pacific, near Lozier, Tex., a freight train was derailed and 14 cars were wrecked. A fireman and one brakeman were killed.

17th, on Kansas City, Memphis & Birmingham, near Cordova, Ala., the engine and 6 cars of a freight train were derailed, making a bad wreck. The engineman was fatally injured.

18th, on Southern Pacific, near Colfax, Cal., a west bound passenger train was derailed and the engine and several cars were wrecked. The engineman, fireman and one brakeman were killed. Three other trainmen and one passenger were injured.

21st, on Baltimore & Ohio, at Lewis's Mills, O., a freight train was derailed and a brakeman was injured.

23d, 4 a. m., on Cincinnati, New Orleans & Texas Pacific, at Burgin, Ky., a passenger train was derailed and the locomotive and mail car were wrecked. The fireman and one mail clerk were injured.

23d, on Missouri, Kansas & Texas, near Redrock, Tex., a mixed train was derailed and the express messenger was injured.

27th, on a Chicago, Milwaukee & St. Paul, near Shullsburg, Wis., a train consisting of two engines, a caboose and a flanger was derailed and the flanger fell down a bank. Four employees were injured.

29th, on Maine Central, near Orono, Me., a passenger train was derailed, and the whole train, except the engine and rear car, fell down a bank. Four passengers were killed and 30 were injured.

29th, 11 p. m., on Pittsburgh & Western, near Monroe Falls, O., a fast freight train was derailed and the engine and several cars were ditched. The engineman was killed and the fireman injured.

And 53 others on 43 roads, involving 5 passenger and 50 freight and other trains.

OTHER ACCIDENTS.

2d, on Wabash road, near Fleming, Mo., a car in a passenger train containing horses belonging to a theatrical company caught fire while the train was running at full speed, presumably from the lantern of an attendant, which was overturned. The car, with three horses and a lot of baggage, was burned up.

9th, on Central of New Jersey, at Netherwood, N. J., the tire of one of the driving wheels of the engine of an express train broke while the train was running at high speed; one piece flew against a car in a coal train passing on the adjoining main track and another piece was thrown so that in some way it broke through the side of the first passenger car in the train, damaging the interior of the car and slightly injuring a passenger. The train ran about a mile before it was stopped.

22d, on Baltimore & Ohio, at Mt. Sterling, O., a barrel of gasoline rolled off a platform in front of a passenger train and was broken and exploded. Two cars in the train were damaged by fire.

26th, on Lehigh & Hudson, near Andover, N. J., a locomotive of a freight train was wrecked by the explosion of its boiler. The fireman was fatally injured.

28th, on Boston & Albany, near Enfield, Mass., the locomotive of a passenger train was damaged by the breaking of a parallel rod, and the fireman was injured.

30th, on Erie road, at Hohokus, N. J., the engine of a freight train was damaged by the breaking of a driving wheel tire, and the fireman was injured.

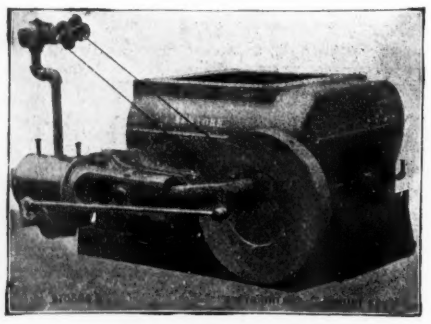
30th, on Norfolk & Western, near Welch, W. Va., the locomotive of a freight train was wrecked by the explosion of its boiler and several coal cars were badly damaged. The engineman and fireman were killed.

And 7 others on 7 roads, involving 5 passenger and 2 freight trains.

A summary will be found in another column.

The Hunt Coal Cracker.

The Hunt coal cracker is designed for breaking the large lumps in run of mine of bituminous coal into smaller pieces that will feed through automatic stokers. The points on the rolls are of tool steel with hardened points, especially designed to

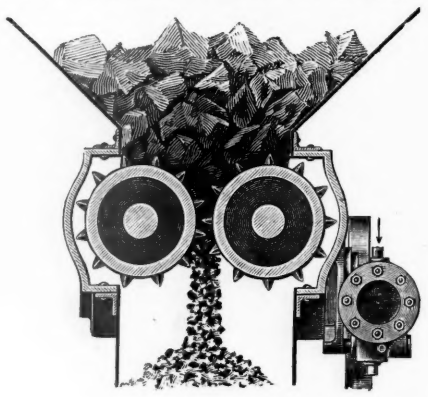


crack and not to crush the lumps of coal so that none of the advantages of lump coal are lost. The fine coal passes through the rolls unaltered.

The cuts show the cracker driven by a direct connected steam engine having the steam ports and passages all draining continuously downward, the steam entering at the top of the cylinder and the exhaust passing out at the bottom, so that all condensed water is immediately drained off, and every drop of the water from cylinder condensation is swept out of both the cylinder and ports at each stroke of the piston, thus materially reducing the cylinder condensation. In starting there are no pockets of water to plunge forward and endanger the engine. There is no danger from frost even in zero weather.

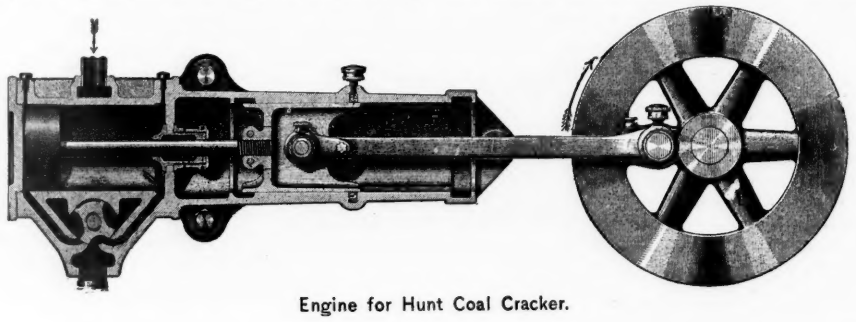
The cross-head bearing on the slide is made longer than the stroke of the piston so that it will not uncover a central oil well, packed with an elastic absorbent packing, that keeps the sliding surface constantly swabbed with oil. The bearing is unusually wide, so that the bearing on the slide is about four times the area generally used in commercial engines.

The rolls are made the proper diameter for the size required, and are not adjustable in the frame. Both the gearing and the rolls are entirely enclosed, each in a separate compartment in a cast iron frame. This prevents the coal dust from entering either the bearings of the machinery, the gear box, or the room in which the breaker is located. The gearing is easily accessible, but entirely inclosed and protected from dust while running. The gears run in a bath of oil. The vertical distance between the feeding hopper and



the delivery spout is reduced to a minimum as the space available for the cracker is usually limited. A horizontal spindle governor is so placed as not to interfere with the feeding hopper. The breaker may be placed below the hopper under the car track. When coal is hoisted from a vessel the breaker is usually put under the hopper into which the coal buckets dump.

While the average horse-power consumed by a coal breaker is small, the necessity for strong and perfect construction of the parts under stress must be evident. The axles in the rolls are of steel, large in diameter, and the frame is of massive construction



Engine for Hunt Coal Cracker.

to resist the great and sudden strains that may come upon it especially when some foreign substance accidentally falls in the rolls while running.

These machines can be used to advantage for breaking other hard substances, the rolls in such cases being made to suit the work.

A Nickel Steel Company.

Under this heading the Iron Age for March 3 has a long item, some of the statements of which we give below. Notice has appeared in the Official Gazette that application has been made for a charter to incorporate the Nickel Steel Co. of Canada; the capital to be authorized is $20,000,000. The applicants are: John Maclaren, Brockville, manufacturer; Geo. B. Douglas, New York, manufacturer; Alexander Fraser, Ottawa, lumberman; David Maclaren, Ottawa, lumberman; F. F. Vandevoort, Pittsburgh, manufacturer; Geo. A. Cox, Toronto, capitalist; Nathaniel Dyment, Barry, lumberman; Alexander Maclaren, Buckingham, lumberman; Andrew T. Wood, Hamilton, merchant; John Moody, Hamilton, capitalist, and John Paterson, Hamilton. These are the names in the foreground; others of at least equal financial strength are said to be behind them.

The powers called for are to enable them to develop mines and mining properties, and to dispose of the same by sale, lease or otherwise; to manufacture and treat metals, minerals and ore; to construct railroads connecting mines, etc., and to establish steamship lines. Although they do not say so in the notice of application, they require before they will set their capital at work that an export duty will be put on ore and matte containing nickel. If that is granted they will proceed to establish works for the refining of nickel and the manufacture of nickel steel. The company proposes to manufacture nickel steel and ship it to England; they also count on doing a large business with the United States.

The following line of reasoning is taken: Deprived of the raw material by a Canadian export duty, American manufacturers will be unable to supply refined nickel for the use of the manufacturers of nickel steel plate. The American duty on refined nickel will prevent the nickel steel manufacturers from getting any by importation; hence, for the want of refined nickel there can be no nickel steel manufactured in the United States.

This is the second nickel company to take shape within the past two months, the other being the Canadian Consolidated Copper & Nickel Co., the composition of which company is partially the same as that of the Nickel Steel Co. of Canada. Under the act incorporating the Canadian Consolidated Copper & Nickel Co. they will be authorized "to amalgamate with any other company having objects altogether or in part similar to those of the company hereby incorporated, and any other such company not possessing powers sufficient for the purpose is hereby by this act empowered to enter into such arrangement to amalgamate with the company hereby incorporated," etc.

Foreign Railroad Notes.

The Saxon State Railroads report that in 1896 only 18 out of every 10,000 of the passengers over their lines rode on first-class tickets.

The average receipts per ton per mile on the Hungarian State Railroads in 1896 was 1.477 cents, which is 40 per cent. more than the receipts per passenger mile. In this country the ton-mile rate is 60 per cent. less than the passenger-mile rate.

At a number of the more important stations on the Prussian State Railroads rolling chairs are kept for the movement of invalid or crippled passengers between the trains and the cab stands. No charge is made for their use.

It is generally known that it is hot in India, and by those who look at maps it is also known that a goodly area in its northern portion is covered by the highest mountain range in the world with eternal snows. Toward these the Europeans, exhausted by the heat on the plains, retreat to recover health and strength. One of the most famous of these mountain resorts is Darjeeling, formerly reached over a difficult mountain road. To make it more accessible, a railroad of 2 ft. gauge, 50 miles long was built, mostly on the highway road, with an average grade of 126 ft. per mile, and curves as sharp at 71 ft. radius. It cost $17,150 per mile, and last year it earned enough for a 10 per cent. dividend. Numerous tea plantations along the line help to swell the earnings.

TECHNICAL.

Manufacturing and Business.

The National Paint Works sends samples of its latest method of metal protection. It has introduced a priming paint listed as No. 400, and a field coat paint listed as No. 500. These give the work two coats of non-metallic pigment, leaving it free for the use of any finishing color, if desired. For these some special claims are made, as for instance, the use of linseed oil made from Calcutta seed, of Egyptian asphaltum, of high grade wax and copal gums and of the entire absence of benzine.

A company is being organized under the name of the Dauphin Bridge & Construction Co., with office at 419 Walnut St., Philadelphia., Pa., to operate the plant formerly run by the Dauphin Bridge Co., Dauphin, Pa. They will manufacture steel bridges, turntables, roof trusses, girders and general structural work. Charles B. Colby is the manager.

The National Car Truck Co. of Port Byron, N. Y., has been incorporated with a capital stock of $25,000. The directors are: T. F. Dixon, Richard Warren, Wm. Blake, Chas. Thompson, E. M. Stayton, L. H. King, O. B. Tanner, J. A. Topliffe and T. M. Crane.

Newspapers have recently contained reports to the effect that the Yazoo & Mississippi Valley would build a coaling station at Vicksburg at a cost of about $25,000. We are officially informed that this company has taken up the question of improving its coaling facilities at that point, but all that it is intended to do is to make some small improvements and repairs at their present plant and that there will be no contract let, as the work can readily be taken care of by the company's own forces.

Western newspapers contain statements to the effect that the F. C. Austin Mfg. Co., whose plant

in Chicago was recently destroyed by fire, will move to Harvey, Ill., where it will occupy the buildings of the Harvey Steel Car Co. It is also stated that the Harvey Town Council has voted to make some improvements in the neighborhood of the factory.

The State Department has authorized the United States Consul at Tampico, Mex., to assist American manufacturers who may be desirous of exhibiting their goods in that place. It is announced that a room at the Consulate will be devoted to the exhibition of any small articles that may be easily handled.

The Monarch Brake Beam Co. is very busy at present, among the orders for brake beams which they have recently received being one from the Seaboard Air Line for 200 brake beams, and one for five carloads for the Illinois Central. These brake beams are also specified for the eight locomotives for the Washington County road, for which the Brooks Locomotive Works have the order.

It is stated that negotiations are now on with the Westinghouse Electric & Mfg. Co for the electrical equipment for a large power plant being built by the British Government at Assouan Cataract, on the Nile River, Egypt. The equipment will include about 25,000 H. P., costing approximately $400,000. The power is to be sent for 100 or more miles through the cotton-growing district.

The Challenge Machine Co. has been incorporated in Trenton, N. J., by F. M. King, J. W. King, B. F. Baird and Edward C. Regan of Philadelphia, and Wm. F. Fixhian of Camden, N. J., with a capital stock of $50,000, to make metal working machines.

Iron and Steel.

The Sheridan (Pa.) furnaces, operated by Grubb & Kaufman, Ltd., but which are at present idle, will be sold at the Reading Exchange on April 5. The plant consists of two anthracite furnaces, with a capacity of 200 tons per day, nearly 30 acres of ground and a number of tenant houses.

The Franklin Steel Casting Co., Franklin, Pa., has a contract with the London Underground Electric Ry., aggregating 1,000,000 lbs. of steel.

The Dayton Foundry Co., Dayton, O., has been incorporated to engage in a general foundry business, with a capital stock of $10,000, by W. L. Barthelamy, A. Barthelamy, Frank Freed, Casper Pierson and Charles Treon.

The Greenville rolling mills of P. L. Kimberly & Co., at Greenville, Pa., which have been idle for several years, started up last week. A condition of the starting of the plant was that the employees take a certain amount of stock. At a conference held with P. L. Kimberly, the following was agreed upon and accepted by the men "That each employee buy a certain amount of the company's bonds in about these proportions: Puddlers, $200; heaters, $400, and roughers, $200, these bonds to be paid for in wages, 20 per cent. being kept back each payday for that purpose until the whole amount is liquidated. For the first 60 days, however, only 10 per cent. is to be paid; heaters, 5 per cent. extra."

At the annual meeting of the Lackawanna Iron & Steel Co., held March 3, the following figures were given: The profits on coal amounted to $239,641.95, though the company's net loss amounted to the sum of $992,899.11, showing that the company operated its works outside of coal mines at a loss of $1,232,541.06. The company's surplus, which in the six years, 1891-1896, had risen to $1,356,689.45, was reduced to $363,790.34. The following Board of Directors was elected: Samuel Sloan, W. E. Dodge, S. S. Palmer, D. C. Blair, New York; Walter Scranton, New Jersey; Moses Taylor, Pyne, N. Y.; E. B. Sturges, Henry Wehrum and Austin B. Blair, Scranton, Pa.

The Sweets Steel Co. of Syracuse, N. Y., has been incorporated to manufacture steel goods. The capital is $100,000. The directors are: A. N. Palmer, J. W. Smith, Ethel Sweets, J. S. Finch and Peter Eckel.

The Otis Steel Co., Ltd., of Cleveland, O., is building five large gun carriages for the Government. They are for guns to be used on United States battleships.

The Pennsylvania Steel Co. is estimating on a great deal of business. They have in sight more new business than at the same date for some years.

New Stations and Shops.

Local papers have reported recently that the plans for the new Union station at Dayton had been decided upon. We are officially informed that no plans have been adopted nor contracts let, but that several architects have been asked to prepare plans and estimates for the station building, and as soon as they are received a plan will be selected and bids invited.

The Geo. B. Swift Co. of Chicago, general contractors, of which Geo. B. Swift, former Mayor of Chicago, is President, has secured the contract for the building of the shops of the Cleveland, Cincinnati, Chicago & St. Louis at Urbana, Ill., and will begin work on the seven buildings April 1. The building will be superintended by Geo. F. Jenkins, who has resigned his position as Master Carpenter of the Illinois Central to become Superintendent of the Geo. B. Swift Co.

Interlocking.

The National Switch & Signal Co. is putting in an interlocking plant of 26 working levers for the Peoria & Pekin Union where it connects with the St. Louis, Peoria & Northern at Grove Siding, Ill.

The question of requiring the installation of interlocking plants where steam railroads are crossed by street car lines in the larger cities of the State is being considered by the Railroad & Warehouse Commission of Illinois.

A Shipyard for New York.

In a communication to the Iron Trade Review, of Cleveland, Mr. Andrew Carnegie advocates the establishment of a big commercial shipyard on the waters of New York harbor. He says that the prices which the British and German shipbuilder must pay for steel are so much higher than we have to pay in New York—that is, nearly $30 as compared with $22 or $23—that a well-equipped New York shipyard could compete with the world. New York is particularly advantageous, because repair work could be got, a profitable dry dock could be established as part of the equipment, and because further "two years hence the cost of transportation of steel delivered at New York from Pittsburgh will not exceed one dollar per ton by the way of Conneaut and the deepened Erie Canal. Indeed it will be less since it will cost nothing to send steel to Conneaut in cars which otherwise must return to the lake empty for ore." He thinks that steel makers would be justified in guaranteeing to such a concern a continuance of the present low prices of steel for a term of years. On this ground there is nothing to fear, however, as "henceforth the prices of steel will rule lower in our country than in any country of Europe. It will not be long before a large portion of this steel supply must be drawn by Europe from the United States." We take the liberty of calling the attention of the enterprising and ambitious manager of the Crescent shipyard to this opportunity.

Boiler Inspection.

The following little table gives a summary of the work of the inspectors of the Hartford Steam Boiler & Insurance Co.:

	1896.	1897.
Visits of inspection made	102,911	105,062
Whole number of boilers inspected	205,957	206,657
Complete internal inspections	78,118	76,770
Boilers tested by hydrostatic pressure	8,187	7,870
Total number of defects discovered	143,217	131,192
" " of dangerous defects	12,988	11,775
" " of boilers condemned	663	588

Why Brakes Were Cut Out.

Mr. J. W. Thomas, Jr., Assistant General Manager of the Nashville, Chattanooga & St. Louis, has prepared a statement of the air-braked cars on the Chattanooga division out of Nashville during the month of January, 1898. During the month the total number of air-brake cars forwarded was 1,915, of which number 1,794 cars had brakes in good working order and 121 air-brake cars were cut out. The average number of serviceable air-brake cars to each train was 4.5. Of the 121 cars cut out the following named defects were noted:

Triple valves out of order	3
Triple valves gummed up	8
Sand holes in triple valves	1
Release valves leaking	4
Broken cylinders	2
Broken cylinder gaskets	2
Broken auxiliary reservoirs	1
Release springs broken	2
Pistol packing leather worn out	1
Piston heads broken	1
Brakes would not apply	2
Leaking out of exhaust port or pressure retaining valve	29
Brakes leaked off	4
Brakes would not release	5
Quick action in service application	11
Release too slow	3
Brakes unreliable	17
Brakes would not apply	1
Broken main pipes	1
Broken branch pipes	7
Brake rigging out of order	8
Defects not shown by report	8
Total	121

In some instances inspectors did not have time to take down the triple valves and inspect them, and forty-seven of the 121 cars belonged to private lines. Mr. Thomas writes as follows: "The object of the report was to get at the reason why brakes were cut out on leaving Nashville, but the defects in some of the brakes were so glaring that I thought it advisable in making a summary of the report to show, as far as practicable, just what was the trouble with the brakes."

The Westinghouse Brake in Italy.

The company working the Southern Italian railroads has discarded the Hardy brake and will substitute for it the Westinghouse brake. The change is to be made first on 140 locomotives, 158 passenger cars and 45 baggage cars.

The Simplon Tunnel.

There is some apprehension that the construction of the Simplon railroad and tunnel may meet with obstacles which were thought to have been overcome. Under the law for the purchase of the Swiss railroads by the State, which the people voted on favorably Feb. 20, Switzerland agrees to execute the work on condition of certain subsidies from Italy. The Italians had agreed to this, but now the city of Milan asserts that it will be unable to furnish its part of it, which was very large.

Electricity On the Evanston Division of the St. Paul.

Concerning this important project, in a general way it is assumed that electricity will be used, but it is not decided whether the third rail or trolley will be employed, nor is it known whether or not the Northwestern Elevated and the Union Loop will be used to bring the trains down town. That is a matter that is altogether in the air. The work will be begun as soon as the right is granted by the Common Council of the city of Chicago.

The Campbell Avenue (Chicago) Bridge.

A conference of the Sanitary District Trustees and the representatives of the Pittsburgh, Cincinnati, Chicago & St. Louis, the Union Stock Yards & Transit Company and Chicago & Northern Pacific was held March 4 to consider the question of what style of bridge should be built in Campbell avenue where the roads named cross the Drainage Canal, mention of which has been made from time to time in the Railroad Gazette. The railroads explained their objections to the eight-track swing-bridge designed by the District Engineers, and stated that they would accept any of the competitive designs wherein each pair of tracks is carried on an independent structure, but would not approve the District Engineers' plans for a swing-bridge. The Sanitary District Trustees decided to act in accordance with the wishes of the railroads and abandon the idea of building the swing-bridge, for which the contracts have been let.

Plan for a Train Lift.

The Berlin Society of Mechanical Engineers offers a prize for a plan for transferring trains between the electric elevated railroad now under way and the surface street lines by means of elevators and turn-tables. The terminus of the elevated railroad will not permit of an incline. Provision is to be made for a train consisting of two motor cars and one trailing car. The first prize is $288. Plans must be handed in by Oct. 20 next. Very eminent engineers are on the committee which will award the prize.

Train Lengths in Prussia.

The Prussian Minister of Public Works has issued new rules concerning the limits of the length of trains of different kinds and speeds. The maximum passenger train must not have more than 80 car axles. (Some passenger cars have two, some three, and recently a considerable number have four axles.) The limit for speeds of 31 to 37 miles an hour is 60 axles; 37 up to 47 miles, 50 axles; above 47 miles, 40 axles. Freight trains must not have more than 120 axles. (Very few freight cars have more than two axles.) At speeds of 29 to 31 miles an hour the number of axles may not exceed 100; from 31 to 34 miles, 80; from 34 to 37 miles, 60. Trains with continuous brakes may not have more than 60 axles. The draft irons are found to break often in ordinary traffic when a traction exceeding 26,400 pounds is exercised; and this must be borne in mind in attaching helping engines, etc. The new regulations will make it necessary to increase the number of trains in some cases.

Axle Lighting on the Boston & Albany.

An officer of the Boston & Albany writes to us as follows: "The B. & A. is trying a device for lighting cars by electricity, which consists of a dynamo mounted on one of the axles and operated by gearing engaging with a pinion on the armature of the dynamo. The current generated goes directly to the lamps if these are lighted, or to a storage battery if the lamps are not in use. An automatic cut out disconnects the dynamo from the battery when the speed falls below a certain amount—variable at pleasure—so that the batteries cannot discharge through the dynamo. When the train is standing at a station or elsewhere, the lights are maintained by the batteries, which are of sufficient size to keep them burning for ten hours. Nineteen lamps are in the body of the car, and one over each platform. These may all be burned at a time, or only so many as are needed. A pole changing device maintains the same direction of the current through the batteries when the car runs in the reverse direction. No extended trial of the appliances has yet been made, and only one such car is as yet in use, but it gives a good light, and thus far works pretty well. The apparatus was furnished by the American Railway Electric Light Co. and was installed by the Cumner Richards Co. of Boston."

The Rail Production of 1897.

The production of steel rails as reported by General Manager Swank to the American Iron & Steel Association, shows a heavy increase for 1897 over the output for 1896. The figures are: 1897, 1,614,399 gross tons, and for 1896, 1,102,892 gross tons. The output for 1895 was greater than that of 1896, but less than that for 1897, the output in each of these three years having been greater than that for 1894. Of the output for 1897 it is stated that rails under 45 lbs. made up 85,117 tons; between 45 and 85 lbs., 1,193,771 tons, and over 85 lbs., 335,511 tons. The maxi-

mum production of Bessemer rails was reached in 1887, when 2,044,819 tons were rolled.

American Steel & Wire Company.

A meeting of the representatives of the companies to consolidate under the above name was held at the Waldorf-Astoria, New York, March 4. Ohio, Pennsylvania, Massachusetts and Illinois interests were represented. In a reported interview with E. H. Gary of Chicago, the counsel for John W. Gates, President of the Illinois Steel Co., who is interested in the Consolidated Steel & Wire Co., after the meeting, he made a statement, part of which we give: The profits of the wire makers within the last few years have been extremely small, and the struggle for existence has, in many cases, been a severe one. By combining their interests and saving in their executive departments, the cost of production will be lessened and will put the corporation in a position to compete on favorable terms with European makers. The output of all the firms in this country at present is about 1,000,000 tons a year and this will be considerably increased on account of the decided increase in the export trade which must inevitably follow.

A Big Lake Steamer.

The launching of the steamer William R. Linn from the yards of the Chicago Shipbuilding Co., at South Chicago, was safely accomplished on March 5. The Linn is the largest steamer yet launched on the lakes, and is to be used by her owner, C. W. Elphicke of Cleveland, in the grain trade between Buffalo and the various lake ports. The dimensions are, length over all 420 ft., keel 400 ft., width 48 ft., and depth 28 ft. The engines are quadruple expansion and 2,200 H. P. and there are two boilers each 14 ft. 8 in. in diameter, and 11 ft. 6 in. long. The boat is to be lighted and steered by electricity and equipped with all recent improvements. The carrying capacity is 5,100 gross tons on a 17 ft. draught and it can also load 204,000 bu. of grain. Work on the Linn was commenced early in September, 1897, as noted in our issue of Sept. 10.

Car Coupler Litigation.

A little less than a year ago we recorded the result of a suit brought by the St. Louis Car Coupler Company against the National Malleable Castings Company for infringement by the Tower coupler. In that suit the complainant lost, Judge Taft, at Cincinnati, having decided to the effect that the Tower coupler did not infringe, and the bill was dismissed at the cost of the complainant. We now receive information that in the U. S. Circuit Court, sitting at Cincinnati, this decision has just been upheld, namely, that the Tower coupler does not infringe on the patents in suit.

THE SCRAP HEAP.

Notes.

Record discipline was adopted on the Fitchburg Railroad March 1.

The street railroad companies of Chicago have been notified by the city that they must begin to put fenders on their cars March 28, and furnish open cars with side bars for the protection of passengers on the side next the adjoining main track.

The Federal Grand Jury at San Francisco has found indictments against 8 wholesale and 500 retail coal dealers who were members of the coal trust recently declared illegal by the U. C. Circuit Court. The defendants were charged with maintaining an association to restrain interstate commerce by regulating the price of coal in Oregon, Washington and other States.

The bill providing right of way for railroads in Alaska has now passed both Houses of Congress. The right through all government lands is given free, under suitable regulations, but there is a proviso, added in the Senate, that where a line passes through a narrow pass or canyon the District Court shall see that the first company does not unjustly exclude other companies desiring subsequently to run a line through the same pass.

On March 3 the Lower House of Congress decided by a vote of 162 to 119 to lay the Loud bill on the table. This seems to be taken as the final defeat of the bill, at least for this session. The bill was designed to relieve the mails of great quantities of unprofitable matter, carried at the newspaper rate of one cent a pound. The main argument against it, including all the others, is that of Jerry Simpson, who said in substance: "You don't need the restrictions on second-class matter proposed by this bill to correct the postal deficit. The excessive rates paid to the railroads are the cause of all the troubles. Remedy that first."

Residents of Port Jervis, N. Y., have lately been entertained—or distracted—by locomotive whistle blasts blown continuously while trains are running a distance of 2,500 ft., and this remarkable illustration of twentieth century civilization comes about by the specific order of the Railroad Commissioners of the State of New York. It appears that an electric railroad company laid a track across the main line of the Port Jervis, Monticello & New York without first getting permission from the Commissioners; and that the Commissioners, deeming it their duty to make the crossing safe at all hazards, adopted the expedient of giving this decidedly audible warning.

Port Arthur Ship Canal.

Robert Gillam, General Manager of the Kansas City, Pittsburg & Gulf Railway, has received word that the Federal Court sitting in Galveston had dismissed the injunction proceedings brought to prevent the building of the Port Arthur ship canal. Mr. Gillam says that the work of building the canal will now proceed without interruption until it is finished. The proposed canal will run from Port Arthur to Sabine City, a distance of eight miles, and is designed for the use of the Kansas City, Pittsburg & Gulf lines of ocean steamers.

Railroads of China.

The Chinese railroad system, says United States Consul Goodnow, of Shanghai, is made up of two lines, aggregating 293 miles in length. One is the Tientsin-Peking line, 79.7 miles long. [Recently opened—Ed]. The other is the Tientsin-Chung-hon-so line, 214 miles long. [The old line northeasterly, through Kaiping—Ed.] On the first there is one passenger train daily each way, and five mixed trains running over parts of the line. The operatives are practically all Chinamen, and no foreigner can compete with them. The highest paid man is the telegraph operator, at $17.80 gold per month; engine drivers receive $8.90 to $13.38 gold per month; brakemen, section hands and laborers receive $2.68 to $4.46 gold per month. The fare on the Tientsin-Peking line is approximately 1.55 cents gold per mile; on the other road it is 1.10 cents gold. A railroad from Shanghai to Woosung, 14 miles, is now being built by the Chinese themselves; the grading is about finished. The comprehensive plan of Sheng, Director-General of the Imperial Chinese railroad administration, calls for a trunk line 1,500 miles long from Peking to Canton; a line from Shanghai up the Yangtse Valley 2,500 miles, and a line west from Canton 1,500 miles. But these lines are all "in the air;" they will only be built if money can be borrowed for them outside of China.

The Zone Tariff.

Under the zone tariff the number of passengers on the Hungarian railroads increased from 13,000,000 in 1889 to 26,000,000 in 1891, and 35,000,000 in 1896; the passenger earnings from $7,258,000 in 1889 to $9,000,000 in 1891 and $12,685,000 in 1896. The number of tons of freight hauled increased from 16,577,000 in 1891 to 20,201,000 in 1896, and the freight earnings from $25,111,000 in 1891 to $32,643,000 in 1896. Thus, since 1891 the number of passengers has increased 35 per cent., and the passenger earnings 41 per cent., while the freight moved has increased but 22 per cent., and the freight earnings 29 per cent. Notwithstanding the great increase in passenger traffic it is still light in proportion to the population, amounting to about 60 miles of travel per inhabitant, compared with 167 miles in this country, where it was the lightest for many years. But in the freight movement the difference is very much greater—200 ton miles per inhabitant in Hungary and 1,167 here.

Overland to India.

Russian journals discuss a connection of their Trans-Caspian Railroad with the railroads of India as something that must be effected within a few years. One route proposed is from the present terminus of the Russian Murghab Railroad, by way of Herat and Kandahar, to a connection with the Indian Scind Railroad at Chaman; the other, much further east, would leave the Trans-Caspian at Samarcand and pass by Bucharei and Kabul to Peshawur, over very different ground. On both the Indian and the Russian side is a long mileage of railroad built for strategical purposes, and these might be made economically valuable by uniting them, so that India and Russia, or at least Eastern Russia, might make exchanges directly. The length of road to be built would be perhaps 800 miles.

Russian Mails for China.

The first sign that the Siberian Railroad is having an effect on transcontinental traffic is an announcement that between Dec. 15 and Jan. 31 last letters from Germany to Pekin, Tientsin and Taku, China, would be forwarded through Siberia unless another route was expressly specified. It is about 1,500 miles from the present terminus of the Siberian Railroad direct to Pekin, a large part of the way across the great Mongolian desert, over which, however, are frequent caravan routes.

The North Sea Canal.

The North Sea Canal traffic grows. For the last two years ending with June, the number and tonnage of the vessels passing through the canal have been:

	1896-'97.	1895-'96.	Increase	Pc.
Number of vessels.....	19,960	16,934	3,126	18.5
Tonnage	1,848,458	1,505,893	342,475	22.8

The average burden of the vessels passing was only 93 tons last year, showing that the great majority must have served for a local coasting traffic and not for long sea voyages. The receipts of the canal for tolls and tonnage were about $350,000. Sixty pilots are employed and the number is to be increased by 20.

The Conductor's Valve in Europe.

The emergency apparatus for putting on power brakes is in every compartment of a European car, and consequently out of sight of conductors and brakemen. A card attached gives notice that it must be used only in emergencies under penalty of a fine. But probably in nine cases out of ten when it is used at all it is mistakenly used. A lady has been known to put on brakes when she thought she was regulating the heat in the compartment, and recently an Italian traveling in Germany used one as a bootjack; he got his boot off with it, and at the same time stopped the train and was fined 30 marks.

Heating Cars and Stations.

A society of physicians in Austria has memorialized the Railroad Minister concerning the unsatisfactory heating of railroad cars and stations. It says that they are often greatly overheated, and again insufficiently heated, and this, they say, is a frequent cause of catarrhal diseases. They suggest that thermometers in cars and stations would go far toward mending matters, and say that 59 degrees Fahrenheit is about the figure which should never be exceeded. They could have found the same state of things in America, only more so. Judging by considerable experience, 80 degrees seems to be considered the proper maximum, rather than 59.

Steam Tugs for Chinese Canals.

The Consul at Chefoo transmits a copy of a letter from the Rev. L. J. Davies, of Chinan. It is believed that the new governor will advocate the latest ideas in all directions. It may be well to add that manufacturers should be careful to insert all the costs, state whether free on board at New York, San Francisco, Tacoma, and, if possible, freight charges by sailing vessels or by steamer to Shanghai or Chefoo. The Chinese do not care for fancy work, but require simple and strong boats—the plainer and stronger the better:

"I have been asked to procure information regarding the purchase of tugboats or launches suitable for navigation of the canal. The plan is to buy these boats, enlarge the canal, and thus reduce the time between Chinan and the outside world. If you can put me in communication with some reliable American firm, I will be glad to present their circulars to the Chinese interested in the matter. It is desired to present the matter to the new governor as soon as possible."

British Foreign Trade.

Mr. J. Schoenhof, writing in the New York Times, gives some figures of British trade (from Board of Trade reports) which will surprise those who have predicted the speedy commercial and industrial ruin of that vigorous kingdom.

Exports of iron and steel, and other metal products, and of machinery and mill work from the United Kingdom in the years 1893, 1894, 1895, 1896 and 1897. (In thousand of pounds sterling):

	1893.	1894.	1895.	1896.	1897.
Pig iron	1,971	1,913	2,075	2,534	2,892
Bar iron	929	823	849	1,094	1,084
Rails	1,922	1,885	1,902	3,560	3,858
Wire	1,219	1,033	765	904	867
Galvanized sheets	2,045	1,949	2,249	2,844	2,562
Tin plates	4,991	4,339	4,245	3,036	3,037
Cast and wrought.....	3,765	3,432	3,740	4,719	4,885
Steel, unwrought	1,701	1,974	1,948	2,578	2,697
Total iron and steel.....	20,592	18,689	19,695	23,801	24,639
Manufactures of other metals	6,362	6,045	5,825	6,111	6,366
Hardware and cutlery.....	2,046	1,913	2,075	2,122	2,107
Total manufs., except machinery....	30,837	27,939	28,907	33,549	34,487
Steam and other engines..	4,209	4,083	3,595	3,949	3,703
Sewing machines	717	770	917	955	1,076
Mining machines	409	387	721	1,048	875
Textile machines	5,255	5,479	6,163	6,746	5,703
Other descriptions	3,324	3,486	3,819	4,314	4,925
Total machinery and mill work	13,917	14,205	15,215	17,014	16,282
Total metals and machinery	44,754	42,144	44,122	50,563	50,769

Had the exports of 1897 fallen behind those of 1896 under the same working conditions it would not necessarily indicate a loss in trading position. The stories of the disaster resulting from the engineers' strike certainly prepared us for a tremendous loss in trade. But there is a considerable gain in all the coarser products over 1896, and even in machinery, the work most affected by the strike, we see increases over 1896. A falling off is only noticeable in textile machinery, which again for 1897 exceeds 1893 and 1894; while the totals in machinery for 1897 exceed considerably 1893, 1894 and 1895.

It is fair to assume that the trade for 1897 would have been very much larger had the strike not occurred. A very great increase can be predicted for 1898 on the basis of these figures. And, indeed, it is in a fair way of realization

Torpedo Boats Tried.

The two new torpedo boats, the Gwin and Talbot, just completed by the Herreshoffs, had their official speed trials in Narragansett Bay under favorable conditions, and both exceeded their contract speed, the former making an average of 20.9 knots per hour and the latter 21.1. The average steam pressure on the Gwin was 208 pounds to 194 pounds on the Talbot. The Gwin's engines made an average of 430 revolutions and the Talbot's 422.
M & A

The New Interstate Commerce Commissioner.

The President on March 8 sent to the Senate the name of Mr. William J. Calhoun of Illinois, to be Interstate Commerce Commissioner. Mr. Calhoun is a lawyer of Danville, Ill., in good practice and is a friend of the President. He has not been prominent in politics until very lately. He is about 45 years of age.

A New Railroad in Brazil.

The Manaos Railroad Co. was incorporated at Albany, N. Y., Feb. 25, with a capital stock of $500,000, to build and operate a steam or electric railroad in the city of Manaos and elsewhere in the state of Amazonas, Brazil. The Directors are: A. J. Maham, of Lorain, O.; S. N. Brady, Albany; E. C. Mayham, C. R. Flint, W. D. Walker and E. C. Converse, of New York City; J. W. Scott, of Orange, N. J.; F. R. Stewart, of Brooklyn, N. Y., and F. H. Hebblethwaite, of Manaos, Brazil.

A German Joke.

A valued correspondent, who has lately returned from Europe, offers to us for the Scrap Heap the following:

The last train having arrived at the station, passengers discharged and the employees having locked the station and gone home, how many people were left in the station? Answer: Eight; "for men" and "for women." Our correspondent discovered this in Berlin, and thinks it works out as well in English as in German. That depends somewhat upon his pronunciation.

An Electric Train Indicator

The Ohio Central has in operation at its Columbus passenger station a device for indicating to waiting passengers the time at which their train will arrive. The indicator is placed in a case in the main waiting room. It is worked from the train dispatcher's office by electricity. The dials are changed in the waiting-room to correspond to changes made on the dial in the dispatcher's office. The dials show whether the train is on time or how late it is, while a drum with name

of each of the trains placed on it is turned by electricity to show which is the next train due. The New York Central has placed in position at some of its important stations a device quite similar. The New York Central has dials at the hotels all worked on the same wire as those at the station.—Cleveland Leader.

New Railroads in West Africa.

It is believed that there may within the next few years be an important development in the gold mining business on the gold coast of West Africa, and in the opening up of this district the Secondi-Tarquah Railroad will play an important part. From some statements from official (unpublished) documents seen by a London paper, it appears that the railroad commences at a point about 300 yards to the northeast of Fort Orange, the old Dutch port at Secondi. At Ande, about 4½ miles down, a considerable detour has to be made, as the place is situated on a watershed which has to be surmounted. From Ando to Ashieme (about two miles) the line is contiguous to the main path. As in the rainy season water accumulates on the low-lying ground it is necessary to carry the railroad on an embankment from 4 to 5 feet high to keep the rails above flood level. Across the river Bonza a bridge of 70 ft. span has to be erected, and a number of small bridges have to be put up at other points. For a 2-ft. 6-in. gauge the cost is estimated at $1,000,000 and for a 3-ft. 6-in. gauge $1,100,000. The total length is about 39 miles. A branch line from Mansu to Kayneon-Kor is also proposed at a cost of about $270,000 for 2-ft. 6-in. gauge and $300,000 for 3-ft. 6-in.

Luxurious Cars.

A striking feature of the evolution of electric traction is the great improvement in the furnishings and fittings of the cars. Among the changes in the fittings is the abandonment of the old slatted blinds for closed cars, which have been replaced by handsome curtains. A similar improvement has been made in the open cars by doing away with the striped canvas curtains extending along the length of the car, and substituting waterproof fabrics in the shape of shades, that can be raised and lowered between the uprights. These shades in the case of both closed and open cars are now largely made from the material known as Pantasote, which furnishes a protection from rain and sun, neither of which affect it. It contains no rubber or celluloid, does not mildew or rot, gives out no odor, and is practically non-combustible. The Metropolitan Street Railway Company of New York has just adopted Pantasote as standard for the entire system, and the Brooklyn Heights system is also equipping a large number of its cars with this material. The Long Island Railroad has also recently adopted Pantasote for the purposes referred to. At the present time there are not less than 1,000 cars of the electric and steam railroads in the vicinity of New York that are being equipped with this curtain material.

The War Scare and American Railroad Shares.

For the past week or so there has been a feeling of nervous apprehension in nearly every department of the Stock Exchange, and the movement of prices has been generally downward. The center of disturbance has been in the American railroad section. To show how general has been the recent reaction in American railroad shares, we subjoin a table in which the prices of a fortnight ago are contrasted with the closing quotations on Thursday evening:

	Feb. 24.	Feb. 11.	Fall.
	$	$	$
Atchison, common	12¼	13⅞	1¾
Do. preference	28¼	33	4¾
Central Pacific	13¼	14⅜	1¼
Chesapeake and Ohio	20⅞	24¾	3⅞
Chicago, Milwaukee, etc	95⅝	99	3⅜
Denver preference	48½	54	5½
Erie shares	14½	16⅛	1⅝
Do. 1st preference	39¾	44¼	4½
Illinois Central	110½	109¼	*1¼
Lake Shore	196	196	....
Louisville and Nashville	56½	62	5½
Missouri, Kansas, etc	11¾	14	2¼
New York Central	115	122	7
New York, Ontario, etc	15⅞	18¼	2⅜
Norfolk and Western preference	49¼	55⅝	6¼
Northern Pacific	22¼	28	5¾
Do. preference	61½	68⅛	6⅝
Pennsylvania	57¾	61¾	4
Reading, 1st preference	23½	26¾	3¼
Union Pacific	29½	35¼	5¾
Wabash preference	16¾	19½	2¾

*Rise.

The almost universal decline in the prices of the more active issues thus exhibited has been due especially to the feeling of political uneasiness in connection with the Cuban question, which has grown apace since the Maine disaster.—The Economist, London.

Firing on the Wabash.

The following circular has been sent out from the office of the Fuel Agent of the Wabash Railroad:

Beginning March 1, 1898, an individual account will be opened with each engineer to which all coal used by him will be charged. At the same time the car mileage made by such engineer will be computed, and at the end of the month a statement issued showing the performance of each engineer based upon the number of pounds of coal consumed per car mile by each, those having the best record in their respective classes being at the top. This is intended to place each engineer strictly upon his individual record, with a view to determining who are the most economical in point of fuel consumption, and the showing of each in this regard will be considered in connection with promotion and preferment in the service.

The new form of coal ticket is intended for use by road engines only. Each engineer will be furnished a book of tickets, which he will retain until the end of the month, regardless of the engine upon which he is engaged. An engine going out on a run is delivered to the engineer with a tank full of coal, or its equivalent in tickets, and the engineer is required to give tickets, not only for the coal taken on the trip, but also (in case of changing engineers) for a sufficient amount to put the engine into the house at the end of the run with a tank full of coal, the same as he received it. In case of engineers changing at terminals where no coal is issued, the engineer giving up the engine must give to the hostler tickets to an amount equal to the number of tons that would be required to fill the tender. These tickets must be delivered by the hostler to the engineer taking the engine out, and he can use them at the next coaling station to replenish his supply.

In the first place, it should be explained that the large percentage of gas contained in bituminous coal is nearly all driven off by the heat in a few seconds after the coal enters the fire-box. If fresh air is mixed with this gas, it will burn and generate heat. If not, it will pass out unconsumed in the form of smoke, causing a waste and creating a nuisance. The formation of smoke can be largely prevented by careful and intelligent firing. If but one or two shovels full of coal are put in at a time and the door is left a little way open for a few seconds, air will mix with and burn the gas generated from the same. Firemen are cautioned to discontinue the practice of charging three or more shovels full of coal without intermission, and to work with as light a fire as possible to avoid waste of steam at the safety valve.

In addition to seeing that firemen carry out the above instructions, engineers should use good judgment in the use of the injector, as economical firing cannot be done unless water is supplied to the boiler regularly. Attention is also called to the importance of using the feed water heater, as by that means warm water is supplied to the boiler, thus saving considerable of your heat energy. Water in tenders should be heated to from 70 to 90 degrees before leaving terminals. The injector heaters should be used to prevent popping off and at the same time to assist in heating water in the tender. Enginemen should apply the smoke suppressors before shutting off, especially on passenger trains, thus avoiding a very serious nuisance and preventing waste of fuel as well.

LOCOMOTIVE BUILDING.

The Hutchinson & Southern is in the market for two locomotives.

The Toledo & Ohio Central is asking bids on six freight locomotives.

The Rogers Locomotive Works are building four locomotives for the Toledo, Peoria & Western.

The Kansas City, Pittsburg & Gulf has ordered one more engine from the Baldwin Locomotive Works.

The Baldwin Locomotive Works are building four moguls and one American type locomotive for the Fort Worth & Rio Grande Railroad.

The Dominion Atlantic has recently placed an order with the Baldwin Locomotive Works for one passenger engine.

The eight locomotives for the Washington County Road, mentioned in our recent issues, are being built by the Brooks Locomotive Works.

The Chicago & Northwestern has placed an order with the Schenectady Locomotive Works for ten 18 x 24 in. 6-wheel switching locomotives and ten 19 x 26 in. 10-wheel freight locomotives, duplicates of engines of the same class recently furnished.

The Chicago, Indianapolis & Louisville has issued specifications for five mastadon type freight engines, to have 21x26-in. cylinders, 54-in. driving wheels, 30-in. truck wheels, and weigh 176,000 lbs., with 145,000 lbs. on the drivers. The engines will have Belpaire boilers, 68 in. in diameter, and New York air brakes.

The Great Northern order for locomotives placed with the Brooks Locomotive Works, and referred to in our last issue, consists of 10 mastadons, like two just built; 12 mastadons with 19x32-in. cylinders and 55-in. drivers, eight engines with 20x30-in. cylinders and 63-in. drivers, and two switchers with 19x26-in. cylinders.

The order for one compound and one simple locomotive and five spare boilers, for the Chicago Great Western, mentioned in our recent issues, has been placed with the Richmond Locomotive & Machine Works. The two engines will be moguls with a weight of 100,000 lbs. on drivers and a total weight of 120,000 lbs. The cylinders of the simple engine will be 19 in. x 28 in., and of the compound 21 in. and 33 in. x 28 in. Both engines will have 60 in. driving wheels and carry 200 lbs. of steam pressure. They were designed by Mr. Tracy Lyon, Master Mechanic, to be suitable for the freight service of the road. It is understood that these are sample engines, and that more will be ordered if they are satisfactory.

CAR BUILDING.

The Lehigh Valley will, on March 15, award contracts for 1,000 freight cars.

The St. Charles Car Co. is building two passenger cars for the St. Louis, Peoria & Northern.

It is reported that the Louisville & Nashville is in the market for 500 coal and 100 furniture cars.

The Richmond, Fredericksburg & Potomac is having 10 freight cars built by Pullman's Palace Car Co.

The Ohio Falls Car Manufacturing Co. is building eight passenger cars for the New York, Ontario & Western.

The Armour Packing Co. has recently placed an order with the Kansas City Car & Foundry Co. for 100 refrigerator cars.

The Kansas City, Pittsburgh & Gulf has ordered 200 flat cars from Pullman's Palace Car Co. This order was mentioned in our issue of Feb. 4.

The Mather Stock Car Co. has recently placed orders for 500 cars, 300 with the Missouri Car & Foundry Co., and 200 with the St. Charles Car Co.

The Toledo & Ohio Central is now receiving bids on the 800 coal cars, for which it has been preparing specifications, as mentioned recently in this column.

The order for 250 flat cars and 50 stock cars for the Chicago, Indianapolis & Louisville, mentioned in this column Feb. 25, has been placed with the Haskell & Barker Car Co.

The Chicago & Southeastern has ordered 200 coal cars and three cabooses from the Ohio Falls Car Co., which are to be built after the standard of the car company throughout.

The Wolff Packing Co. of Topeka, Kan., has placed an order for 10 refrigerator cars with the Wells-French Co., to be built after the standard of the Atchison, Topeka & Santa Fe, and delivered this spring.

The Philadelphia & Reading has finished building, at its Reading shops, the 400 coal cars recently referred to. It is understood that more cars of the same class will be built at these shops in the near future.

The Queen Anne road has placed an order with the Illinois Car & Equipment Co. for 25 box cars. They will be built at the Anniston shops, and equipped with Buckeye couplers, Chicago roofs and air brakes.

On March 2 two new limited trains were put in service by the Chicago & Northwestern between Chicago and St. Paul, one train leaving each city that day on its first trip. These trains were built by the Wagner Palace Car Co., and consist of baggage, buffet and library and dining cars, and combination and ordinary sleepers, reclining chair and combination cars. The exteriors are painted dark green with gold lettering, and the interiors are elegantly finished and supplied with every convenience and luxury usual on new trains of this class, the appointments of which are steadily becoming more sumptuous. The trains are lighted by Pintsch gas, and also by electricity, furnished from dynamos in the baggage cars. There are wide vestibules inclosed in plate glass and lighted by electric lights.

BRIDGE BUILDING.

ANOKA, MINN.—The Commissioners of Anoka County will submit the question of issuing $20,000 in bonds for building a bridge to a vote of the county.

BAYONNE, N. Y.—The city government has requested the Central Railroad of New Jersey to build a bridge at E. 30th St.

BOSTON, MASS.—The House concurred with the Senate in admitting the bill for the construction of a $100,000 bridge over the Saugus River, but referred the bill, in non-concurrence, to the committees on metropolitan affairs and roads and bridges, sitting jointly.

CHATHAM, VA.—Bids are asked for until April 11 by the Commissioners of Pittsylvania County for building two county bridges, one over Pigg River, the other at Markham Ford.

CHESTER, PA.—It is stated that the Philadelphia, Wilmington & Baltimore has made a proposition to the city to build a bridge at Lloyd St.

CHICAGO, ILL.—The present swing bridge over the Chicago River at State St. is to be replaced by a modern rolling-lift bridge. The condition of the present bridge is such that it is likely it will have to be closed to street traffic as soon as the navigation season opens. A rolling-lift bridge at this point is expected to cost, approximately, $175,000.

CLEVELAND, O.—It is stated that an extra bond issue of $25,000 will be asked for in order to commence work on the proposed Willett street bridge. The bridge will cost about $150,000.

COLUMBIA, S. C.—The Commissioners of Richland County, press reports state, have applied to the Legislature for permission to build a bridge over the Tugallo River.

CUMBERLAND, MD.—The West Virginia Central & Pittsburg, it is stated, will build a bridge at the intersection of Cumberland and Market Sts.

DAYTON, O.—A bill has been introduced in the State Senate to appropriate funds for building a bridge over the Miami River at Dayton.

GONZALES, TEX.—Press reports state that the Commissioners of Gonzales County ask for bids until May 11 for building a steel bridge across San Marcos River.

HORNELLSVILLE, N. Y.—An iron bridge will be built at a cost of $2,500 to replace the wooden structure at Van Scoter St.

MARLIN, TEX.—The Commissioners of Falls County will build an iron bridge across the Brazos River at a cost of about $15,000.

NEW YORK, N. Y.—Work was begun last week on the new Willis Avenue Bridge, which is to span the Harlem River and connect Willis Ave. on the north side with First Ave. on the south side (see Railroad Gazette, Dec. 10 and Dec. 31, '97.) The new bridge will begin at 125th St. and First Ave., on the Harlem side, and run, including its approaches, to Willis Ave., and 134th St., a total length of 2,600 feet. The river will be crossed by two spans and a draw 300 feet long, the draw being near the Harlem bank of the river. The bridge, including the land necessary for the approaches, will cost about $2,000,000.

OAKHARBOR, O.—It is stated that the Wheeling & Lake Erie will probably build a new bridge over the Portage River at Oakharbor.

OAKLAND, CAL.—The County Surveyor, it is stated, is preparing plans for a concrete arch bridge to take the place of the Llewelling bridge.

PADUCAH, KY.—A new bridge will be built at West Jackson St. in place of one that was condemned.

RICHMOND, VA.—Richmond, Petersburg & Carolina. See Railroad Construction column for this week.

TRENTON, N. J.—The Board of Freeholders ask for bids for building a bridge over Eight Mile Run Creek in Lawrence Township.

XENIA, O.—Press reports state that bids are wanted until March 24 for building a bridge over Caesar Creek. J. H. McPherson, Auditor, Greene County.

YOUNGSTOWN, O.—The Erie Railroad, through John H. Clarke, counsel, has made certain propositions to the commissioners of Mahoning County and the city government of Youngstown offering to share in the expense of building the proposed bridge over the Mahoning River at South Ave.

RAILROAD LAW—RECENT DECISIONS.

The amendment to the penal code of New York, adopted at the last session of the Legislature, which makes the sale of railroad tickets by a person not an authorized agent of the company issuing them a misdemeanor, and which provides for the redemption of unused tickets by the companies, has been declared constitutional. The question of constitutionality was raised upon an habeas corpus proceeding to test the legality of an imprisonment for violation of the statute (decided by the App. Div. Sup. Ct., February, 1898).[1]

The United States Supreme Court holds that a railroad company owes to a passenger who must cross its track to reach his train a higher degree of care than is due to a person not standing in that relation,

and, as the passenger has a right to rely upon the exercise of this special care, he will not necessarily, and as a matter of law be held to a strict compliance with the rules as to stopping, looking and listening for approaching trains, applicable to trespassers or strangers crossing a track. Accordingly where a passenger was struck and killed by a rapidly moving train at a station while necessarily crossing the track to take another train, it is held that the question both of the negligence of the company and of the passenger should have been left to the jury for decision, although there was proof that the passenger "started straight across, did not stop at all, and did not look in either direction" (decided by the Supreme Court, November, 1897).[3] One justice dissents on the ground that the deceased was guilty of negligently contributing to the accident of such a character as to defeat a recovery. The law of New York agrees with this case.[3]

It is held in Minnesota that proof of violation of the rules of a railroad company, put in force for the protection and safety of its road, for the government of railroad employees engaged in the operation of locomotives upon its tracks, tends to establish negligence on the part of the company whose employees are guilty of such violation, but does not necessarily establish it. In the language of the opinion: "They (the rules) did not stand on the same footing as statutes or municipal ordinances * * *. The law, statutory or municipal, if valid, fixes the legal standard of duty to those for whose protection it is designed, while private rules may require either more or less than is required by law. So, compliance with private rules would not necessarily constitute reasonable care, nor a violation thereof necessarily constitute negligence" (decided in the Supreme Court, January, 1898).[4] This was an action to recover damages for personal injuries alleged to have been caused by the negligence of one company using the tracks of another, the rules referred to having been promulgated by the latter.

It is decided in the Federal Court that a receiver of a railroad company is not answerable, and cannot properly be made a party to an action to recover for an injury resulting from any negligent act of the company, arising before the commencement of the receivership (decided by the C. C. A., 9th Cir., October, 1897).[5] Even on a contract entered into by a corporation prior to a receivership it is settled that the receiver is not liable unless he adopts or ratifies such contract.[6]

In an action decided in the Federal Court it appeared that a railroad company, holding property of the plaintiff in its warehouse, allowed a car marked "Powder," which was in fact empty, but locked, to be placed in close proximity thereto. The warehouse caught fire and the property was destroyed solely because the firemen were prevented, through fear of the powder car, from extinguishing the fire. The company is held liable to pay the loss (decided by the C. C. A., 9th Cir., October, 1897).[7] In considering this case the distinction between the liability of a railroad company as a carrier and as a warehouseman is to be observed. As a carrier it is deemed in law to be an insurer of property intrusted to it as such, and, generally speaking, responsible for its value, absolutely and at all events, whereas as warehouseman it is chargeable only with such care as the circumstances reasonably call for.

It is held in Georgia that in order to avoid killing stock on its track, it is not incumbent upon a railroad company to require its engineman and fireman to be on the lookout for animals when engaged in the performance of duties indispensable to the proper running of the locomotive, nor to have a third man on the engine, charged exclusively with the duty of keeping such a lookout (decided by the Supreme Court, March, 1897, published, December, 1897).[8] The interest in this case lies in the fact that it overrules the law of Georgia on the subject, existing up to the time of its decision. The law as it now stands agrees, so far as it goes, with that of most other jurisdictions.

A statute of Kansas prohibits railroad companies from changing or limiting their common-law liability, except by regulation or order of the Board of Railroad Commissioners. The common law imposes upon them, as carriers, an obligation to pay the full value of property lost by them, which they have undertaken to transport, in the absence of a contract limiting such liability. It is held that a stipulation, in a contract for the shipment of live stock, limiting the amount for which the company shall be liable in case of loss or injury, made without the permission or order of the Board of Commissioners, is invalid and cannot be enforced (decided by the Supreme Court, January, 1898).[9]

The United States Supreme Court holds that a statute like the one referred to in the last paragraph is not void as an attempt to invade the exclusive right of Congress to regulate interstate commerce even as applied to a contract for interstate transportation. Accordingly a verdict in compensation for the full extent of his injuries, recovered by a plaintiff who was hurt in a journey from Iowa to Illinois, is sustained, although he had made a contract limiting the liability of the company to him to a sum less than the amount of the verdict (decided by the Supreme Court, January, 1898).[10]

It is held in Georgia that a contract between a railroad company and a ticket broker, whereby the latter is enabled to sell tickets entitling the holder to transportation between States over the company's line, at less than the established rate for tickets sold by its regular agents between the same points, is in violation of the Interstate Commerce act, and void (decided by the Supreme Court, December, 1897).[11]

[1] People ex rel Tyroler vs. Warden of City Prison. Not yet officially reported.
[2] Warner vs. B. & W., 18 Sup. Ct., 68.
[3] Brassell vs. N. Y. C. & H. R., 84 N. Y., 241.
[4] Smithson vs. Chicago G. W. et al., 73 N. W., 853.
[5] Northern Pac. vs. Heflin, 83 Fed., 93.
[6] Express Co. vs. Railroad Co., 99 U. S., 191.
[7] Hardman vs. Montana U., 83 Fed., 88.
[8] Rogers vs. Georgia R., 28 S. E., 457.
[9] St. L. & S. F. vs. Sherlock, 51 Pac., 899.
[10] Chic., M. & St. P. vs. Solan, 18 Sup. Ct., 289.
[11] Raleigh & G. vs. Swanson, 28 S. E., 601.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Chicago & Eastern Illinois.—Preferred, quarterly, 1½ per cent., payable April 1.
Chicago & Northwestern.—Preferred, 1¾ per cent., payable April 6.
Little Miami (Penn.)—Guaranteed, quarterly, 2 per cent., payable March 10.
Oregon Railroad & Navigation.—Preferred, quarterly, 1 per cent, payable April 1.
Portland & Rumford Falls.—Quarterly, 1 per cent, payable March 15.

Buffalo Railway.—Quarterly, 1 per cent., payable March 15.
Chicago City Railway.—Quarterly 3 per cent., payable March 31.
North Shore Traction (Boston).—Preferred, 3 per cent., payable April 1.
Philadelphia Traction.—Four per cent., payable April 1.

American Society of Mechanical Engineers.

The Spring convention of the American Society of Mechanical Engineers will be held at Niagara Falls, N. Y., during the week of May 30 to June 4. Details of the programme will be announced later. The secretary should be notified at once of proposed papers and manuscripts, and drawings should be received by him not later than March 15.

New England Railroad Club.

At the annual meeting of the club, held in Boston, Tuesday evening March 8, the following were elected for the ensuing year: President, C. E. Fuller; Vice-President, T. B. Purves, Jr.; Treasurer, Chas. W. Sherburne. Finance Committee: C. E. Fuller, F. E. Barnard and W. S. McGowan, Jr. Executive Committee: C. E. Fuller, T. B. Purves, Jr., T. W. Adams, J. W. Marden, W. P. Appleyard, John Medway, W. J. Robertson, Henry Bartlett, F. B. Smith and J. T. Chamberlain.

St. Louis Railway Club.

A regular meeting of the St. Louis Railway Club will be held to-day at 3 p. m. in the parlors of the Southern Hotel. A paper will be presented by S. D. Webster, General Claim Agent Terminal R. R. Association, St. Louis, entitled: "The Claim Agent, His Relations to Various Departments of a Railroad," and a paper will be presented by George E. Howard, Superintendent R. R. Department Scarritt-Comstock Furniture Co., St. Louis, entitled: "The Supply Man, and What He Has Done to Improve the Railway Service."

The paper presented by George B. Leighton, entitled: "English Railway Practice," and the paper presented by Prof. R. A. Smart, entitled: "The Performance of a Four Cylinder Compound Locomtive," will be open for discussion.

Western Society of Engineers.

A regular meeting of the Western Society of Engineers was held Wednesday evening, March 2, in the society rooms, Monadnock Block, Chicago, 41 members and guests being present. The names of 13 newly elected members were read, and one application for membership was received. The report of the committee appointed to prepare a memorial on the death of Mr. Edwin G. Nourse was received. and read by the secretary.

The paper for the evening, "The Evolution of the American Type of Water Wheel," prepared by Mr. W. W. Tyler, was, in the absence of the writer, read by Mr. T. L. Condron. The paper described the various stages of progress and the difficulties met in bringing the modern water wheel up to its present high efficiency. After a short discussion of turbines the meeting adjourned.

Western Railway Club.

The next regular meeting of the Western Railway Club will be held at 2 p. m. March 15, 1898, in the Auditorium Hotel, Chicago. The paper for discussion, advance copies of which have been mailed to the members, is by Mr. Gustav Giroux, and is entitled the "M. C. B. Coupler." Mr. Giroux advocates a uniform drop test machine, and claims that the method of securing the couplers in the machine has quite as much effect on the results of tests as the weight of the drop and the distance through which it falls. He gives specifications for cast steel couplers and knuckles and malleable iron couplers.

The committee which was appointed to suggest changes which it may be desirable to have made in the Rules of Interchange has completed its report; the report is sent to the members in the advance sheets and will be discussed at this meeting.

Engineers' Club of St. Louis.

The 468th meeting was held March 2 with President Bryan in the chair. Thirty-one members and eight visitors were present.

Prof. J. H. Kinealy as chairman of the Entertainment Committee made a verbal report. He outlined what the Entertainment Committee wished to do, and stated that they had no funds to carry out their purposes. A motion was made by Mr. Colby that the profits in the publication of 1898 Bulletin be used as an Entertainment Fund. After some discussion this motion was carried.

The paper of the evening by Mr. Wm. H. Bryan, entitled "Recent Improvements in Steam Ferries" was then read. After reviewing the objects of ferries and the different methods which had been used in their operation, the author described a steam ferryboat which has recently been put into operation in this city. The boat is called the Andrew Christy, and embodies some radical changes in Mississippi River ferryboat construction. The paper was illustrated by drawings. An informal discussion followed, participated in by Messrs. Ockerson, Flad, Fish, Crosby, McMath, Russell and Kinealy.

PERSONAL.

—Captain D. F. A. Wheelock, Asso. M. Am. Soc. C. E., has been elected City Engineer of Warren, Pa.

—Mr. Thomas B. Gault, at one time General Agent of the Wabash, with headquarters in Omaha, Neb., committed suicide in Chicago March 3. The suicide is attributed to temporary insanity.

—Mr. A. M. Stimson, Purchasing Agent of the Cleveland, Cincinnati, Chicago & St. Louis, with office at Cincinnati, O., died at his home in Lafayette, Ind., March 8, after a brief illness.

—Mr. James H. Carpenter, steel maker, inventor of the Carpenter projectile, died at his home in Reading, Pa., March 6, of pneumonia, at the age of 51. In 1889 Mr. Carpenter established the Carpenter Steel Works and he retired about two years ago.

—Mr. Edward Lafayette Russell, who was elected President of the Mobile & Ohio at the annual meeting held in New York last week, was born in Franklin County, Ala., Aug. 19, 1845. He studied law and was admitted to the Mississippi Bar in 1871. In May, 1876, he was appointed General Solicitor of the Mobile & Ohio by Receiver Col. William B. Duncan, and retained this position until March 1, 1897, when he was elected First Vice-President, with executive authority, and held this office until his election as President, succeeding Gen. James C. Clarke, who declined re-election.

—Mr. M. Sabouret, Principal Engineer of the Way and Works Department, and Mr. M. Solacroup, Principal Assistant Engineer of the Rolling Stock and Locomotive Department, of the Orleans Railroad of France, together with several assistant engineers of the same road, are making a tour of some of the principal cities of the United States. They arrived in New York about two weeks ago and will visit Philadelphia, Washington, Pittsburgh, Chicago and Boston, and return to Paris by way of New York. They are looking over the railroads of this country, principally as to electrical methods of traction.

—Mr. William B. C. Pearsons, President of the Holyoke & Westfield Railway, which is leased to the New York, New Haven & Hartford, died at his home in Holyoke, Mass., March 3, at the age of 70. Mr. Pearsons was the first Mayor of Holyoke. He was graduated from Harvard College with the degree of LL.B., in 1849, and was at one time a member of the State Legislature, and afterward a Senator during the war period. He was for many years director of the Holyoke Savings Bank, and became President of the Holyoke & Westfield in 1894, succeeding Timothy Merrick, which position he held until his death.

—Mr. Edward P. North, Vice-President Am. Soc. C. E., has resigned his office as Consulting Engineer of the Department of Highways in New York City. Mr. North was appointed Water Purveyor several years ago, which gave him entire charge of all the pavements of New York City, new and old. Later he became Consulting Engineer to the Department of Public Works, and then of the Department of Highways under the new charter. Incidentally, we may mention that notwithstanding the personal assault made upon Mr. North by the Comptroller of the city some months ago, his salary was not reduced, as the newspapers reported, but remained unchanged until the end of his service. Those resident in New York and those who have had much opportunity to see the pavements recently, are familiar with the great improvement made under Mr. North's administration.

—Gen. James C. Clarke, who declined re-election as President of the Mobile & Ohio at the annual meeting held in New York last week, was born in Montgomery County, Md., in 1824, and entered railway service in 1844 with the Baltimore & Ohio. He was with this road for ten years. From 1854 to 1855 he was Superintendent of the Central Ohio, now, under a lease, the Central Ohio Division of the Baltimore & Ohio, and from then until 1856 he was Superintendent of the Northern Division of the Illinois Central. Later he became General Superintendent of the Illinois Central and remained as such until 1859, when he was appointed Superintendent of the Northern Central, which is now controlled by the Pennsylvania. Mr. Clarke retired from the railroad business in 1862 to engage in private enterprise. In 1870 he became President of the Cheasapeake & Ohio Canal Co., and in 1873 he was Superintendent of the Erie, and later became Third Vice-President of that company. Mr. Clarke was again Superintendent of the Northern Division of the Illinois Central from September, 1874, until 1876, when he became General Superintendent of the company. He was a Director, Second Vice-President and General Manager of the Illinois Central until 1879, and Vice-President of that road and Vice-President and General Manager of the Chicago, St. Louis & New Orleans, now a part of the Illinois Central, and held these offices until August, 1883, when he became President and General Manager of the Illinois Central. Mr. Clarke remained as President of the Illinois Central until 1887. In 1888 he was elected Vice-President and General Manager of the Mobile & Ohio, and became its President and General Manager in April, 1889, and was President from March 25, 1895, until he declined re-election last week.

—Mr. Hugh J. Jewett, who made himself famous in the railroad world as Receiver and President of the Erie Railroad, died at Augusta, Ga., on the night of March 6, in the eighty-first year of his age. Mr. Jewett was born July 1, 1817, near Glenville, Md. He studied law, was admitted to the Maryland bar and almost immediately went to Ohio and began there the practice of the law in the town of St. Clairsville. Later he moved to Zanesville, where he soon made for himself an important place in his profession and in business. He became President of the Muskingum Branch of the State Bank of Ohio, was appointed District Attorney and in 1857 was elected President of the Central Ohio Railroad, now the Central Ohio Division of the Baltimore & Ohio. Later he became Vice-President of the Pittsburgh, Cincinnati & St. Louis, now the Pittsburgh, Cincinnati, Chicago & St. Louis; was interested in the construction of the Kansas Pacific and became General Counsel of the Pennsylvania Company. He took considerable part in politics and ran for Governor of the State, served in the Ohio Legislature and was elected to Congress. He resigned his seat in Congress in 1874 to take the presidency of the Erie and in 1875 he was made Receiver of the company. It was under his management that the name was changed to New York, Lake Erie & Western. He continued at the head of the New York, Lake Erie & Western until August, 1884, when John King, Jr., was elected President. The years of Mr. Jewett's control of the Erie were difficult and often stormy. They were marked by dissensions and litigation, and of course there are widely different opinions as to the wisdom of his administration, but nobody doubts that he was an able and strong man. The road was largely transformed under his administration from a weak road to something approaching what it is now, although this work of transformation

was begun by his predecessor, Mr. Watson, and has been greatly developed by his successors, Mr. King and Mr. Thomas.

Mr. Jewett was extremely ambitious, and it is pretty certain that for years he cherished the hope of becoming President of the United States, and there are those who hold that his administration of the Erie was more or less affected by this hope.

ELECTIONS AND APPOINTMENTS.

Arkansas & Choctaw.—Charles S. Keith has been appointed General Passenger Agent, in addition to his duties as General Freight Agent, with headquarters at Kansas City, Mo.

Baltimore & Ohio.—The title of Peter Harvey has been changed from Pacific Coast Agent to General Agent, with headquarters at San Francisco, Cal. W. G. Moffett has been appointed Traveling Freight Agent, with headquarters at Cumberland, Md., succeeding Benjamin Wilson, promoted. Mr. Moffett was formerly Agent at Staunton, Va.

Baltimore & Ohio Southwestern.—J. B. Scott, Jr., has been appointed District Passenger Agent, with headquarters at Cincinnati, O.

Centralia & Chester.—T. H. Hinchcliffe has been appointed Auditor, succeeding R. S. Rosborough, Jr., resigned. S. K. Burton has been appointed Car Accountant, succeeding J. E. Dean, resigned. The headquarters of both are at Sparta, Ill.

Chicago, Burlington & Quincy.—Dale Harmon, who recently resigned his position as Traveling Auditor to accept a position with Armour & Co., of Chicago, has returned to his former office in St. Joseph, Mo., as Traveling Auditor. Harry C. Evans, who was appointed to succeed Mr. Harmon as Auditor, has been transferred to Hannibal, in his former office as Traveling Auditor.

Chicago Junction.—F. T. Croxon has been appointed Purchasing Agent, with headquarters at the Union Stock Yards, Chicago, Ill.

Chihuahua & Pacific.—General Manager J. P. Ramsey of the Rio Grande, Sierra Madre & Pacific, with headquarters at Juarez, Mex., has been appointed General Manager of the Chihuahua & Pacific in addition to his present duties. There is no truth in the report that the two roads are to become one system. Mr. Ramsey is General Manager of both roads, but they are separate and distinct companies.

Cincinnati Northern.—At the recent annual meeting of this company, Joseph H. Seaman was elected Secretary and Treasurer of the company, succeeding Eugene R. Leland. His office is at 80 Broadway, New York City.

Cleveland, Cincinnati, Chicago & St. Louis.—W. R. Garstang, formerly Contracting Agent of the White Line Central Transit Co., at Indianapolis, Ind., has been appointed Contracting Freight Agent, succeeding Frank Finney, resigned. M. L. Akers, heretofore General Agent of the Cleveland, Cincinnati, Chicago & St. Louis and the Chesapeake & Ohio at Louisville, Ky., has been appointed Superintendent of Terminals of these roads at Louisville. He will have charge of all property owned or controlled by the Cleveland, Cincinnati, Chicago & St. Louis, Chesapeake & Ohio and the Louisville & Jeffersonville Bridge Co. at Louisville and Jeffersonville, Ky., and will have jurisdiction over all train employees while in these terminals. Mr. Akers will continue to perform his present duties as Agent. The appointment took effect March 1.

Corvallis & Eastern.—The officers of this company, successor to the Oregon Central & Eastern, referred to in another column, are as follows: President, J. K. Weatherford, Albany, Ore.; Secretary, J. R. Wyatt, Albany; General Manager, Edwin Stone, Corvallis, Ore.; Superintendent, C. Sullivan, Corvallis; General Freight and Passenger Agent, J. C. Mayo, Corvallis; Auditor, H. Trinwith, Corvallis.

Denton, Decatur & Western.—The officers of this company referred to in another column are as follows: President, R. E. Carswell; First Vice-President, J. W. Simmons; Second Vice-President, E. H. Baumgaertner; General Manager, W. F. Buchanan; Superintendent, W T. Bashaw; Secretary, Will A. Miller, Jr.; Treasurer, J. Ullman; General Counsel, W. T. Simmons. The main office is at Decatur, Tex.

Detroit, Toledo & Milwaukee.—N. K. Elliott, at one time Superintendent of Transportation of the Terre Haute & Indianapolis, has been appointed Superintendent, with headquarters at Tecumseh, Mich., succeeding George R. Haskel, resigned.

Dunham & Charlotte.—The headquarters of Frank D. Jones, Superintendent, have been removed from Glendon, N. C., to Gulf, N. C.

East Shore Terminal.—It is officially stated that no appointment is to be made to succeed Col. Isaac W. Fowler as Receiver, W. E. Huger, Jr., remaining the Sole Receiver. (See this column for last week.)

Findlay, Fort Wayne & Western.—C. L. Gardner, who recently resigned as Trainmaster of the Columbus, Sandusky & Hocking, has been appointed Superintendent of Transportation, with headquarters at Findlay, O., succeeding General Manager C. M. Bissell, recently resigned. The appointment is effective March 15.

Georgetown & Western.—Leo Coyle has been appointed Auditor, with office at Georgetown, S. C., succeeding T. W. Brightman. Mr. Brightman continues in his office as General Freight Agent, with headquarters at Georgetown. The change took effect March 1.

Grand Trunk.—T. Ferritor, of Stratford, Ont., has been appointed Assistant Superintendent of the Southern Division of the Grand Trunk and Wabash, from Windsor, Ont., to Black Rock (Buffalo) and Suspension Bridge, N. Y., under the lease between the Grand Trunk and the Wabash, referred to in these columns for last week. George C. Jones, Superintendent of the Southern Division, has his headquarters at St. Thomas, Ont.

Gulf, Beaumont & Kansas City.—The following appointments took effect March 1: Frank Buford of Sabine Pass, Tex., has been appointed Assistant Engineer; Col. P. A. Work of Kountze, Tex., has been appointed General Right of Way Agent; Willard C. Averill of Beaumont, Tex., has been appointed Auditor, succeeding W. W. Wilson, resigned. Mr. Wilson retains his position as Assistant General Manager and will have general supervision of the company's affairs.

Illinois Central.—M. D. Royer has been appointed Assistant Auditor of Freight Receipts, with office at Chicago, Ill., succeeding F. Fairman. W. S. Pinney has been appointed Chief Traveling Auditor, with office at Chicago, succeeding Mr. Royer.

M. D. Nelon has been appointed Superintendent of Floating Equipment with headquarters at Cairo, Ill., and will report to the Chief Engineer. A. T. Savin, heretofore Road Master of the Louisville Division, with headquarters at Louisville, Ky., has been appointed Assistant Engineer with headquarters at Chicago, Ill.

International & Great Northern.—S. W. Pimm has been appointed Soliciting Freight and Passenger Agent, with headquarters at San Antonio, Tex.

Iowa Central.—J. N. Tittemore, heretofore General Freight and Passenger Agent of the Des Moines Northern & Western, has been appointed General Freight Agent of the Iowa Central with headquarters at Marshalltown, Ia., succeeding E. C. Palmer, resigned.

Kingston & Pembroke.—At the adjourned annual meeting of this company, held at Kingston, Ont., Feb. 28, R. V. Rogers was elected a Director, succeeding Hon. G. A. Kirkpatrick, of Kingston, Ont., resigned.

Lehigh Valley.—John Pickey has been appointed Road Foreman of Engines of the Auburn & Pennsylvania and New York Division succeeding A. C. Smith, recently promoted.

Louisiana Southern.—The new officers of this company are as follows: J. W. Kelman, President, London, England; P. Campbell, General Manager; H. McCall, Jr., Auditor. The general offices are at New Orleans, La.

Louisville & Nashville.—Jackson Smith, heretofore Division Passenger Agent, with headquarters at Cincinnati, O., has been appointed Assistant General Passenger Agent with headquarters at Louisville, Ky.

Macon City & Ft. Dodge.—John Warwick has been appointed Auditor, with office at Fort Dodge, Ia., succeeding David McCay, resigned. The appointment took effect March 1.

Minneapolis & St. Louis.—Howard G. Kelley, heretofore Chief Engineer of the St. Louis Southwestern, with headquarters at Tyler, Texas, had been appointed Chief Engineer of the Minneapolis & St. Louis with headquarters at Minneapolis, Minn., succeeding Charles Wanzer.

Missouri Pacific.—T. C. Kimber, Traveling Passenger Agent at Indianapolis, has resigned, and hereafter will be connected with the Missouri Car Foundry Company. G. A. A. Deane, Jr., heretofore Traveling Passenger Agent, with headquarters at Chicago, has been appointed as successor to Mr. Kimber at Indianapolis.

Mobile & Birmingham.—Forrester Tuttle has been appointed General Agent of the Freight and Passenger Departments with headquarters at Mobile, Ala., succeeding J. S. Taylor, resigned. The appointment took effect March 1.

Mobile & Ohio.—D. W. Buhl, heretofore Commercial Agent, with headquarters at Mobile, Ala., has been appointed Division Freight Agent with headquarters at Montgomery. James S. Taylor has been appointed as successor to Mr. Buhl. The appointments take effect April 1.

Mount Belknap.—At the annual meeting held Jan. 17, Directors were elected for this company, referred to in another column, as follows: Albert G. Folson, Erastus P. Jewell, E. P. Thompson, Charles F. Stone, Bela S. Keniston, Henry B. Quinby and Henry Tucker. The officers are: President, Henry Tucker; Vice-President, Charles F. Stone; Treasurer, Albert G. Folson; Secretary, E. P. Thompson, Lacona, N. H.

New Orleans & Northwestern.—C. G. Vaughn has been appointed Chief Engineer with headquarters at Natchez, Miss.

Northern Pacific.—Edward C. Schoen has been appointed District Passenger Agent, with headquarters at Pittsburgh, succeeding Charles E. Johnson, resigned. The appointment took effect March 1.

James B. Kerr, heretofore Eastern Land Attorney, has been appointed Geueral Land Attorney, and will have supervision of all litigation and contests relating in any way to the land grant of the company. The Western Land Attorney and Division Counsel will report to Mr. Kerr in land grant cases. This is a revival of this position, which for more than a year had been suspended.

Oregon Railroad & Navigation Co.—E. C. Ward has been appointed General Agent with headquarters at San Francisco, Cal., succeeding F. F. Connor, resigned.

Pacific Coast Company.—The officers of this company, operating the Columbia & Puget Sound, Pacific Coast, Port Townsend, Southern and Seattle & Northern Railroads, are as follows: H. H. Durrand, President; William H. Porter, Vice-President; John Kean, Treasurer; E. A. Skinner, Secretary. The headquarters of all are in New York City.

Pacific Coast Railway.—C. J. Smith is President, with headquarters at Seattle, Wash.

Peoria, Decatur & Evansville.—L. F. Barton, heretofore General Roadmaster at Mattoon, Ill., has been appointed Superintendent of Maintenance of Way with office at Mattoon.

Plant System.—The officers of the Walterboro & Western, the sale of which is noted in another column of this issue, were elected March 1, as follows: Maj. C. S. Gadsden, President; J. M. Lee, Treasurer, and R. B. Smith, Secretary, to fill the vacancies caused by the resignation of the officers formerly holding these positions. Jurisdiction of the officers of the operating, traffic and accounting departments of the Plant System was extended over the Walterboro & Western on the same date.

St. Louis, Iron Mountain & Southern.—At the annual meeting of the stockholders held at St. Louis, Mo., March 8, two new directors were elected, one filling a vacancy on the board and the other succeeding S. H. H. Clark. The new directors are C C. W. Lowrey and Frank J. Gould.

St. Louis Southwestern.—H. G. Kelley has resigned as Chief Engineer and the office has been abolished. J. S. Berry has been appointed Superintendent of Water Service, Bridges and Buildings. E. J. Nichols has been appointed Resident Engineer. William Quinn has been appointed Assistant Superintendent of Bridges and Buildings. The headquarters of all are at Tyler, Tex. W. A. Newall has been appointed Commercial Agent in charge of freight traffic with headquarters at Chicago, Ill., succeeding C. A. Shank, resigned. The appointments took effect March 1.

St. Paul & Duluth.—C. J. A. Morris has been appointed Chief Engineer, succeeding L. S. Miller, resigned. The appointment took effect March 3.

Southern.—A. H. Plant, Auditor, will hereafter have charge of the adjustment of all freight claims in addition to his present duties. The title of Claim Agent has been changed to that of Freight Claim Agent, and W. H. Halsey has been appointed to that office.

J. H. Drake has been elected Assistant Secretary with office at Richmond, Va. Mr. Drake continues his duties of Assistant General Freight Agent.

South Georgia.—J. A. le Conte has been appointed Auditor, with headquarters at Quitman, Ga. Mr. le Conte also has control of car records. J. T. Davis continues as General Freight Agent, with headquarters at Quitman, Ga.

Staunton & Augusta.—At a meeting of the Directors of this company, referred to in another column, held at Staunton, Va., March 2, officers were elected as follows: President and General Manager, E. C. Vincent; Vice-President, S. D. Timberlake; Secretary and Treasurer, B. A. Blackmore; President of the Board of Directors, C. L. Weaver. The principal office is in Staunton.

Tacoma & Columbia River.—William C. Halliday, who recently resigned as Engineer of the Eastern Division of the Lake Shore & Michigan Southern, at Buffalo, N. Y., has been appointed Chief Engineer of the Tacoma & Columbia River, with headquarters in Tacoma, Wash.

Toledo, St Louis & Kansas City.—Joseph McKeown, heretofore Roadmaster of the Indianapolis, Decatur & Western at Indianapolis, Ind., has been appointed to the newly created office of General Roadmaster of the Toledo, St. Louis & Kansas City. Mr. McKeown's headquarters will be at Frankfort, Ky., and he will have charge of tracks, bridges and buildings.

Washington & Columbia River.—Joseph McCabe, formerly Superintendent of the Pacific Division of the Northern Pacific, with headquarters at Tacoma, Wash., has been appointed General Manager of the Washington & Columbia River with headquarters at Walla Walla, Wash., succeeding W. D. Tyler, recently resigned. (See this column for last week.)

Wiscasset & Quebec.—W. Fred P. Fogg has resigned as General Manager and William D. Patterson, Treasurer, has been appointed Acting General Manager, with headquarters at Wiscasset, Me.

RAILROAD CONSTRUCTION.

Incorporations, Surveys. Etc.

ABERDEEN & ASHEBORO.—Arrangements have been completed, according to report, for an extension of the Troy Branch south 14 miles to Mt. Gilead, Montgomery Co., N. C. This road extends from Aberdeen to Asheboro, 57 miles, with a branch from Filo west to Troy, 7.5 miles. J. R. Page of Aberdeen, N. C., is Superintendent.

BALTIMORE & OHIO.—This company has purchased 10,000 tons of 80-lb. rail for the lines west of the Ohio River. The order will be divided between the Central Ohio, the Chicago and the Lake Erie divisions. About 15,000 tons of the 40,000 bought last summer for the main line will be placed in the tracks this spring, giving the Baltimore & Ohio new rail from the Ohio River to tide water.

A bill was introduced into the House of Delegates at Annapolis, Md., March 2, for the incorporation of a new company to succeed after the reorganization of the property of this system. The incorporators named are: Louis Fitzgerald, Henry Budge, Eugene Delano and E. R Bacon, of New York; George H. Earl, Jr., of Philadelphia; Alexander Brown, John Gill, W. F. Frick, Edwin Warfield, James Bond, J. McKenny Hoyt and Thomas J. Hayward, of Baltimore. The company on March 1 paid interest on the Central Ohio bonds $56,250, but left unpaid the interest then maturing on the $9,301,512 of 6 per cent. sterling bonds of 1872.

BATON ROUGE & CENTRAL LOUISIANA.—The people of Marksville, La., on March 1 voted a special tax of five mills annually in aid of this road. A similar vote has been taken by Natchitoches, La. The road as projected is to extend from Baton Rouge northwest through Simsport, Marksville and Alexandria to the Texas State line in Vernon Parish. F. M. Welsh of Baton Rouge is President. (See this column for Dec. 3.)

BRECKENRIDGE, DILLON & NORTHERN.—This company has been incorporated in Colorado with a capital stock of $100,000 to build a line from Breckenridge (a point a few miles north of Leadville on the Denver, Leadville & Gunnison), north down the valley of the Blue River and along the Cores and Park mountain ranges to Steamboat Springs and Hahn's Peak, with branches up the Swan River to Montezuma and to Hot Sulphur. The incorporators and directors for the first year are: Robert W. Foote, D. W. Fall, J. P. Looney, W. H. Frye and W. M. Clark, all of Breckenridge. It is stated that construction is to be begun within sixty days.

CANADIAN PACIFIC.—In a recently published interview of William Whyte of Winnipeg, Man., manager of the lines West, the accuracy of which is officially acknowledged, improvements contemplated and in progress on the Western lines of this company's road are described as follows: "Our company intends to spend a large amount of money this year bettering the condition of our roadbed and the various structures that go to make up our railway system. Over the Kaministiquia River we now have a wooden truss bridge; this we intend to replace with a solid stone structure in the form of arches, through which the water will flow. We will also complete the line between Fort William and Winnipeg with heavy rails. This means relaying 100 miles of track, and when finished we will be able to handle any heavy class of freight with the largest engines. It is necessary to have these heavy rails in order that they may stand the strain of the enormous driving power of our new locomotives. These are larger than the famous moguls, and are equal to the big ones used on the mountain section. These will haul one-third more cars than our present ones, and in consequence fewer trains will be required and fewer orders, greatly facilitating the speed of our service. On the Pacific division we will also make many improvements to our roadbed. Some new station buildings are to be erected. At Moose Jaw we will put up a splendid depot, able to accommodate our business there. There will be a dining room, with offices for the superintendent and dispatchers. All our mountain hotels will be enlarged and a magnificent station constructed in Vancouver. As promised by Mr. Shaughnessy, our vice-president, last year, during his visit to the Northwest, a new station will be built at Carberry of modern design. New freight and station buildings will also be erected at Altona, Winckler and Sintaluta."

Having been asked what the company proposed to do in reference to a fast service to accommodate Yukon travel, Mr. Whyte stated: "I think that the class of travel going to the Yukon does not require a fast service for the present; it is more second-class business. The fast service will not be brought into use before the summer, when tourists and others desiring to cross the continent will appreciate such an innovation. The new time card recently announced reduces west-bound time between Montreal and the Pacific coast by four hours and east-bound time by five hours. This change was made owing to the action of the Grand Trunk, desiring to direct business via the United States, and refusing to allow us privileges accorded in the past. We are sure Canadians do not care to see their business going through a foreign channel. It is not to their interests that it should."

CAPE FEAR & NORTHERN.—This company was organized at Holly Springs, N. C., March 2, with proposed capital stock of $300,000 to build a line from Raleigh via Carey and Holly Springs to Lillington, about 35 miles. It is said that the Carey Lumber Co. is its backer, and the road is to be largely for lumber. The officers are: President, G. B. Alford; Vice-President, T. B. Holt; Secretary, Treasurer and General Manager, J. C. Angier.

CENTRALIA & CHESTER.—The work of extending the tracks of this line into Chester, Ill., has been discontinued, pending a decision of Judge Burroughs as to the right of Receiver C. M. Forman to begin suits for condemnation of right of way. (See this column for Jan. 28.)

COAST RAILWAY OF NOVA SCOTIA.—Official statement is received that surveys have been begun this week for the proposed extension from Lockeport, N. S., northeast along the coast toward Halifax. Location has been completed from Yarmouth to Lockeport 97 miles; 31 miles is in operation from Yarmouth to East Pubnico and 20 miles in addition is under construction, the work of which is well advanced. Two survey parties have been placed in the field, one at Lockeport and the other at Halifax, working to meet each other, and as soon as location is definitely decided upon the work will be sub-let and this portion of the line pushed rapidly to completion. The Railway Committee, of the Local Government, now in session at Halifax,

Coast Railway of Nova Scotia.

has approved an amendment to the charter of this company providing for a branch from Liverpool, N. S., to some point in the northern part of Queens County to take the place of the proposed Nova Scotia Southern Railroad, whose charter expired December last. It is expected that the road will be completed to Lockeport by the end of this year, and considerable progress has been made on the line between Lockeport and Halifax. Financial arrangements for the completion of the road have been consummated and a free right of way secured for the entire distance, including subsidies from the Government. The contractors for the portion of the road now building are the Nova Scotia Development Co. of Philadelphia, G. Martin Brill, President, and George Fletcher, Treasurer. L. H. Wheaton, Yarmouth, N. S., is Chief Engineer. (See this column for Dec. 3.)

CHICAGO & ALTON.—State Commissioners Hennessey and Flory have been inspecting the south branch of this road extending from Mexico, Mo., to Cedar City. They recommend that the officials be ordered to proceed at once to put this line into a reasonably safe condition, and that, should they fail to do this, an order be issued restricting speed to 10 miles per hour.

CHIHUAHUA & PACIFIC.—This company has signed a contract with the Nassau Construction Co. of New York to build its proposed line from Chihuahua, Mex., west 200 km. (124 miles) by way of Santa Ysebel and Cusihuiriachic to Guerrero in the mineral districts of the Sierra Madre Mountains. Edward S. Spoffard of Chihuahua, Mex., is Chief Engineer. (See this column for Jan. 28.)

CHILKOOT RAILROAD & TRANSPORTATION CO.—Collector of Customs Heustis at Port Townsend, Wash., has received notice from the Land Office officials that this road has been opened for business. The road was recently completed from Canon City over Chilkoot Pass to Crater Lake, 15 miles. (See this column for Jan. 14 and Feb. 4.)

CLEVELAND & NEWCASTLE.—This company has increased its capital stock from $10,000 to $3,000,000. It has recently been incorporated, as stated in this column for Feb. 4, to build a line from Akron, O., east 85 miles to New Castle, Pa. This is an extension of the Buffalo, Rochester & Pittsburgh, referred to in this column for Feb. 18. George L. Bradbury, Monadnock Building, Chicago, is General Manager.

COLORADO VALLEY.—Official statement is received that grading has been completed from Sweetwater, Tex., to Oakhurst, 25 miles, on this line, which is projected to run from Sweetwater southeast toward San Antonio and Austin. Trains are running from Sweetwater to Adaville, 7½ miles. One hundred and twenty men and 58 teams are at work grading, and five trestles are under way. Contracts are to be let for track-laying, telegraph lines, bridges, depots and water stations. Irving Wheatcroft of Sweetwater is General Manager. (See this column for Dec. 3.)

CORVALLIS & EASTERN.—A letter received from an official of this company, successor to the Oregon Central & Eastern, states that it has not yet been determined what will be done with reference to the proposed extension east from Idanha, Ore. The country east of the mountains has but few towns, but there is a stretch of country about 300 miles long without railroad connection of any sort. Surveys were made by the old Oregon Pacific. The officers of the new company are given in another column.

DALLAS, DESCHUTES & DUFUR.—This company has been incorporated in Oregon with a capital stock of $300,000, to build a line from The Dallas north to Biggs, a point on the Oregon Railway & Navigation Co.'s line in Sherman County. The incorporators are E. E. Lytle, D. C. O'Reilly and W. H. Moore.

DENTON, DECATUR & WESTERN.—Official statement is received with reference to this company, whose incorporation was noted in this column last week. The proposed road is to extend from Plano, Tex., west through Sweetwater, Decatur, Bridgeport and Anson to Sweetwater in Nolan County. The original charter calls for a line from Denton via Decatur to Bridgeport, 40 miles, and it is proposed to build this part of the line first, thereby reaching the coal mines at Bridgeport so as to secure coal for the use of the company, and for the cities of Decatur and Denton. Later the work will be pushed on to Plano so as to connect with the St. Louis Southwestern and the Houston & Texas Central. A large bonus has been secured from many places along the route, including $30,000 cash deposit from Sweetwater. Ten miles of the profile has been completed and work will be pushed rapidly. The officers of the company are given in another column.

DETROIT & LIMA NORTHERN.—Cars are running into Bellefontaine, O., according to report, for the first time, on the extension of the Columbus & Northwestern from St. Johns southeast to Bellefontaine. Men are at work on the extension to Peoria, O., where connection is to be made with the Toledo & Ohio Central. J. T. Adams of Bellefontaine is General Manager. (See this column for Feb. 11.)

DOWNIE CREEK.—This company has been incorporated in British Columbia to build a line from Albert Canyon southwest about 25 miles to Revelstoke, on the Canadian Pacific. Joseph D. Graham is among those interested.

ERIE.—Official statement is received that proposals will be entertained up to March 29 at the office of this company for certain specified work connected with the elevation of the tracks of this road in Jersey City, N. J., between the east end of the tunnel and Provost street. Plans and specifications can be had at the office of the Assistant Engineers at Room 1,401 Havemeyer Building, 26 Cortlandt St., New York, and 226 Pavonia Ave., Jersey City. The company reserves the right to reject any or all bids.

FORT SMITH & WESTERN.—At a recent meeting of the stockholders it was voted to increase the capital stock from $1,250,000 to $5,000,000. The floating of $2,000,000 of bonds is considered sufficient to build the new line, and bonds to that amount will be issued at once. A bill is now before Congress to extend for two years the time for completing the road. The company was incorporated in Arkansas in January, 1896, to build a line from Fort Smith southwest through Indian Territory to a point near McAllister on the Missouri, Kansas & Texas. (See this column for Jan. 21.)

GALLATIN.—This company has been incorporated in Washington with a capital stock of $1,000,000 to build a line in Gallatin County, Mont., from Three Forks, a point on the Northern Pacific, southeast along the Gallatin and West Gallatin rivers, and thence 9 miles up Dodd's Creek. Among the incorporators are W. W. D. Turner, president of the Leroy Mining Co., Spokane, Wash.; W. A. Ritchie and Frank Hall, Milwaukee, Wis.

GALVESTON EAST END PIER, WHARF, DOCK, SHIPPING & TERMINAL COMPANY.—This company has been incorporated in Texas with a capital stock of $500,000 to build and operate docks and railroad terminals at Galveston. The estimated length of railroad and connections is 10 miles. The incorporators are: Sydney T. Fontaine, J. E. Boren, S. G. Kelkirk, J. R. Cheek, C. J. McRae, W. B. Kinkead, G. A. Meyer, Fred. Chase, M. B. Henderson of Galveston, and J. E. Newton of Sour Lake.

GULF, BRAZOS VALLEY & PACIFIC.—Grading has been completed, according to report, from Millsap, Tex., through Mineral Wells to within three miles of Jacksboro, and will be completed to that point as soon as possible. This road is projected to extend from Henrietta south through Mineral Wells to Waco, and thence down the Brazos River to Velasco. W. A. Squires of Henrietta, Tex., is President. (See this column for Dec. 17.)

HUTCHINSON & SOUTHERN.—This road has been completed, according to report, from Medford, Okla., east 25 miles to Blackwell. (See this column for Feb. 25.)

INDIANAPOLIS UNION.—Official statement is received that this company has purchased 235 tons of 85-lb. rails to be used on its belt line at Indianapolis, Ind. The rails will replace lighter steel on curves, etc., where the heavy traffic demands it. (See this column for Feb. 25.)

INTERCOLONIAL.—The first passenger train on the extension from Quebec to Montreal was run March 1. This extension includes the Drummond County line with trackage rights over the Grand Trunk from St. Rosalie Junction. (For full information with maps, see this column Oct. 1.)

LITTLE KANAWHA VALLEY.—This road is completed, according to report, from Parkersburg, W. Va., to Elizabeth, and trains are to begin running next week. Thomas Pettegrew of Parkersburg is Chief Engineer. (See this column for Dec. 24).

LOUISVILLE & NASHVILLE.—An ordinance has been introduced at Mobile, Ala., to grant this company permission to make extensive additions to its terminal facilities in that city.

MEXICAN CENTRAL.—Official statement is received that about 23 miles from Jiminez to Baker has been graded on the extension from Jiminez west about 56 miles to Parral. Track has been laid for four miles. As stated last week, the line must be completed to Parral by March 19, 1899. (See this column for Jan. 21.

MEXICAN INTERNATIONAL.—Over 2,000 men, according to report, will be put to work by April 1 on the proposed extension from Durango, Mex., west 150 miles to Port Mazatlan on the Pacific coast. The rails have already been purchased, and are on their way to Durango.

MEXICAN ROADS.—The Gurney Mining & Milling Company of Topia, State of Durango, has three parties of engineers locating its road from Topia southwest to Culiacan. The maximum grade is 4 per cent., and the maximum curvature 20 degrees. The company hopes to have the profiles and estimates ready for bids before the rainy season, so that work can be pushed after that season is over.

MOUNDSVILLE, WEST VIRGINIA & WHEELING.—This company has been incorporated in West Virginia, with a capital stock of $250,000, to build a line from a point on the Pennsylvania boundary near Majorsville, W. Va., west to Moundsville, and thence north to Benwood and Wheeling. Among the incorporators are: Alexander P. Funk, President; P. Minture Smith and Clarence M. Smith, New York City; William Daniell, Brooklyn; H. A. Douglass, West Newton, Pa.; G. S. McFadden and C. A. Weaver, Moundsville, W. Va.

MOUNT BELKNAP.—The annual meeting of this company was held Jan. 17. The company was organized some time ago and holds a charter from the New Hampshire Legislature to build a railroad from Gilford, on the Boston & Maine, southwest to the top of Mount Belknap. The company has made no efforts to build the road because of the hard times. The officers are given in another column.

NEBRASKA & NORTHERN.—This company has been incorporated in Nebraska with a capital stock of $100,000 to build a line from Atkinson, Holt County, a point on the Freemont, Elkhorn & Missouri River, north about 25 miles. to a point on the Niobrara River. The incorporators are: Matt Daugherty, Elmer S. Dundy, Ralph R. Bittinger, Howard H. Baldridge and John M. Daugherty. The principal office is at Omaha, Neb.

NEBRASKA, KANSAS & GULF.—This company, whose incorporation in Kansas was noted in this column Feb. 4, has also been incorporated in Nebraska with a capital stock of $600,000. The road as projected is to run from Niobrara River in Northern Nebraska south through Nebraska, Kansas, Oklahoma and Texas to the Gulf of Mexico.

NEW ROADS.—A contract has recently been awarded Rust & Co. to build a line from Walker, Mo., on the Missouri, Kansas & Texas, east about 12 miles to El Dorado Springs. J. E. Henderson of Laclede Hotel, St. Louis, Mo., has charge of the work. The Missouri, Kansas & Texas Co. is in no wise financially interested in the road.

A contract has been let, according to report, to Stewart & Keenan, of Westminster, Md., for building an extension of the Salisbury branch of the Baltimore & Ohio into the Meyersdale region about four miles. (See this column under Baltimore & Ohio for Feb. 18.)

NORFOLK & SOUTHERN.—This company is reported to have just completed a survey for a branch from Snowden, N. C., southeast along Currituck Sound to Powell's Point, about 30 miles, but the Board of Directors has not yet taken action as to building.

OHIO RIVER JUNCTION.—This company has been incorporated in Pennsylvania to build a line from Rochester north about 5 miles to North Sewickley Township, near Elwood. The incorporators are J. H. & W. A. Park, E. S. McClain, S. Morgan, C. M. Court, H. M. McClain, H. E. Cramer, A. A. Atterkolt, John Warren and J. P. Leaf.

PENNSYLVANIA COMPANY.—Official statement is received that the double track will be extended from Port Washington, O., to Coshocton, 19.9 miles. Estimates have been prepared for this work, but it has not been determined when contracts will be let.

PONTIAC & PACIFIC JUNCTION.—Official statement is received that this company proposes to build the proposed extension from Alymer, Que., northeast to Hull during the coming summer. So far no con-

tracts have been let, and a portion only of the right of way has been bought. (See this column for Dec. 30.)

QUEEN ANNE'S.—A contract has been awarded to Wade, Burns & Co. for the extension of this road from Lewes, Del., across the meadows to the bay shore, and work will be commenced immediately.

RALEIGH & CAPE FEAR.—Official statement is received that the route of this road, whose incorporation was noted in this column for Feb. 25, is to be from Raleigh, N. C., south about 35 miles to Lillington, the county seat of Harnett County. N. Y. Wade of Bingham, S. C., has the contract and work is to begin at once. The maximum grade is 2 per cent. Arrangements have been made for rails and rolling stock. The officers are: President, John A. Mills, Raleigh, N. C.; Secretary and Treasurer, F. T. Ricks, Raleigh.

RICHMOND, PETERSBURG & CAROLINA.—Official statement is received that 40 miles has been graded and a considerable amount of masonry completed on this line from Richmond, Va., southwest through Manchester, Chester, Petersburg and Lacrosse to Ridgeway, N. C., north 106 miles. Surveys are well advanced, and the road will be built during the year. Negotiations are now in progress with contractors. Work is not difficult, the maximum grade being 50 ft. and the maximum curves 8 deg. There will be six steel bridges, with a total length of about 3,400 ft.; also one mile of trestling, but no tunnels. Contracts have been given out for rails. Gen. James S. Negley, 136 Liberty street, New York, is Vice-President. (See this column for Dec. 31.)

RUTLAND.—An extension of this line is proposed from Burlington, Vt., north through the chain of islands in the northern part of Lake Champlain to Alburg, about 60 miles, where connection will be made with the new line of the Canada Atlantic. The Rutland road runs from Bellows Falls northwest 119.7 miles to Burlington, and, in connection with the Fitchburg, forms a direct route to Boston.

SANDUSKY, CASTALIA & CRYSTAL SPRINGS. Official statement is received that this road is to be built this spring from Sandusky, O., west about 9 miles to Castalia, but the time for building the extension to Port Clinton on Lake Erie has not yet been determined. The company was incorporated in Ohio, Feb. 17, with a capital stock of $25,000. W. E. Guerin, Jr., Sandusky, O., is among those interested. (See this column for Feb. 25.)

STAUNTON & AUGUSTA.—Official statement is received that this company has been granted a charter from the present Legislature of Virginia to build a line from Staunton south about 12 miles, to connect with the Norfolk & Western, giving direct connection with the Baltimore & Ohio and the Chesapeake & Ohio. After the completion of this section the company hopes to extend its line north to Elkins, W. Va., a point on the West Virginia Central & Pittsburgh, and thence to Pittsburgh, Pa. The officers are given in another column.

TACOMA & COLUMBIA RIVER.—An ordinance has been introduced into the Common Council at Tacoma, Wash., asking for a right to extend this road within that city. The road now runs from Tacoma south 12½ miles to Lake Park, and the company proposes to extend it south about 200 miles to Dallas, Ore. (See this column for Feb. 4.)

TENNESSEE NORTHERN.—Official denial is received that this company proposes to build an extension from La Follette Junction, Tenn., northwest 3½ miles to Careyville, as referred to in this column for Jan. 14. The road now connects with the Southern at La Follette Junction.

TOLEDO & OHIO CENTRAL.—Official statement is received that this company has placed an order with the Carnegie Steel Co. for 2,000 tons of Am. Soc. C. E. standard section, 70-lb. rails. These are to be delivered in June and July, and are to be used for renewal on the main line between Toledo, O., and Columbus. The old 60-lb. rails will be used on branches.

UNION PASSENGER DEPOT CO.—This company has been incorporated in Texas with a capital stock of $200,000, to provide terminal facilities at Fort Worth. The incorporators are: J. A. Edson, G. A. Quinlan, S. B. Hovey, John Hornby, L. S. Thorne, Morgan Jones, L. J. Polk and J. W. Maxwell.

VENTURA & OJAI VALLEY.—This line has been completed, according to report, from Ventura, Cal., north to Nordhoff, 18 miles. Grant Bros. of San Francisco have the contract. (See this column for Dec. 17.)

WELLINGTON & POWELLSVILLE. — Official statement is received that grading is completed and track laid on the extension of this road from Windsor, N. C., north to within about 2 miles of Ahoskey. Ballasting is in progress on this portion of the road and grading is nearly completed on the balance. It is expected that the road will be open for business not later than June 1. J. W. Branning, Edenton, N. C., is president. (See this column for Nov. 26.)

WESTERN OF MEXICO.—Engineers are surveying for the extension of this road from Culiacan, Mex., east via Papudos Heights and Santiago Papasquiaro to Durango. The concession was given some time ago and was modified by the Mexican Government on Jan. 13, 1897. The Government agrees to give a subsidy of $8,500 per kilometer. (See this column under "Occidental" for May 28, 1897.)

WHITE, LONOKE & WESTERN.—A call has been issued for a meeting of the stockholders to be held at Lonoke, Ark., April 1, at which a permanent Board of Directors will be elected. The road as projected is to extend from Wooley, a point on the St. Louis, Iron Mountain & Southern, northwest through Lonoke to Seaton. A. P. Weaver of Jacksonville, Ark., is President. (See this column for Feb. 25.)

Electric Railroad Construction.

AKRON, O.—Press reports state that the Akron & Cuyahoga Falls Rapid Transit Co. will build a branch line to the grounds of the Summit County Agricultural Society.

BALTIMORE, MD.—A bill has been introduced in the House of Delegates authorizing the County Commissioners of Baltimore County to grant to the Baltimore, Halethorpe & St. Denis Railroad Co. the right to build and operate railroads on the public highways of the county. The organization of this company was reported by the Railroad Gazette Oct. 22, 1897.

The Baltimore City Railway Co. has petitioned the City Council for the right to lay tracks on a part of North Washington St. and on a part of Mary St.

The Consolidated Railway Co. has petitioned for the right to lay additional tracks on Whitlock and Mary Sts. and Fulton Ave.

BEAVER, PA.—Press reports state that an electric railroad is projected by men in Beaver to connect New Sheffield, Beaver County, with Woodlawn on the Pittsburgh & Lake Erie. The distance is about two miles. Both towns are distant from Beaver about six or seven miles.

CHICAGO, ILL.—The Lake Street Elevated has put a force of surveyors in the field to map out a route for the proposed western extension of the road, under the two ordinances passed by the Town Board of Cicero, and noted in this column Feb. 25. Beginning March 3 12-ride tickets over the Suburban Electric, Cicero & Proviso and Lake Street Elevated, are sold for $1. Each ticket has two coupons, one good over the surface lines and one over the elevated.

CINCINNATI, O.—The Cincinnati & Hamilton Electric Street Railway Co., the incorporation of which was noted in the Railroad Gazette, Feb. 12, 1897, will at once commence the road from Hamilton to College Hill, and has filed a bond with the city of Hamilton as a guarantee that the road will be built and in operation within sixteen months from the date of the franchise, which was granted in November. Among those interested in the road are: Peter Schwab, G. A. Rentschler and J. C. Hoven.

CULPEPPER, VA.—Press reports state that an electric railroad is projected at Culpepper.

CUMBERLAND, MD.—Judge David W. Sloan has granted a certificate of incorporation authorizing the construction of an electric railway from Cumberland through the mining region, 28 miles, to Westernport. Jan. 21 we reported that right of way was being secured for such a line. The district is now served by the W. Va. Central & Pittsburgh and the Baltimore & Ohio. Owing to a State statute limiting the control of a turnpike company or a passenger railroad company to 12 miles, the projectors of this new electric road obtained charters for three separate companies, namely: The Cumberland & Frostburg, the Frostburg & Lonaconing and the Lonaconing & Westernport Electric Railway Co. The combined capital of the three companies is $150,000. Among the incorporators are John W. Burchinal, James E. Hooten, Moundsville, W. Va., and Zachariah Laney, Walter Powell and J. H. Holzshu, Cumberland, Md.

DAYTON, O.—The Troy, Tippecanoe & Dayton Electric Railway Co. has applied for a franchise to extend its tracks in Miami County.

ELIZABETH, N. J.—The Fanwood Township Committee granted a franchise to the Elizabeth & Westfield Street Railway Co. to lay its tracks through the township. The route granted is the same as originally petitioned for by the trolley company. Mention of this company was made in the Railroad Gazette, Jan. 29 and Aug. 2, 1897.

FITCHBURG, MASS.—The Fitchburg & Westminster Railroad Co. has been organized, with a capital of $100,000, to build an electric railroad from Westminster, through Gardner to Fitchburg. Among those interested are: D. M. Dillon, C. F. Baker, G. N. Proctor, W. W. Sargent and R. N. Wallis of Fitchburg, T. C. Bates and others of Worcester.

HAMPTON, VA.—Work will be begun shortly on a new branch of the Hampton & Old Point Railroad Co., which will run from King St. to East Hampton.

HOBOKEN, N. J.—Press reports state that the Bergen County Traction Co., now operating a line from Fort Lee ferry to Englewood, has decided to cross the Northern, West Shore and the New York, Susquehanna & Western tracks above grade, to build its own bridge across the Overpeck River, to construct two miles of macadam roadway and build half a mile of trestle in order to reach Hackensack by way of Bogota. Work will be commenced at once. John E. Ridgway of Philadelphia is president of this company.

LINCOLN, NEB.—The Lincoln Traction Co. will build an extension to Havelock, a distance of about 2½ miles.

LOWELL, MASS.—A bill has been introduced in the Senate to incorporate the Lowell, Marlborough & Acton Street Railroad Co.

MONTVILLE, CONN.—The Montville Street Railway Co., in which Tucker, Anthony & Co. of Boston are interested, will soon be ready to commence work on the road to be built between Norwich and New London.

NORWAY, ME.—The Oxford Central Electric Railroad, now building from Norway village to East Stoneham, and to South Waterford, a distance of 21 miles, will be in operation early this spring. The capital stock of the company is $100,000. The directors are: Fred C. Wilson, Boston, Mass.; L. H. Burnham, Albany, Me.; A. L. Hapgood, B. G. McIntire, Waterford, Me.; Freeland Howe, Norway, Me.

PITTSBURGH, PA.—The McKeesport, Duquesne & Wilmerding Railway Co. will begin an extension of the White Electric Traction road to Wilmerding at an early date, and will also complete the line from Duquesne to McKeesport early this spring. Work has already commenced on the Duquesne end and the contract for an elevated structure, which will cost $20,000, to cross the tracks of the steam railroad, has been let to the Schultz Bridge & Iron Co. of Pittsburgh.

SAGINAW, MICH.—Press reports state that the Saginaw Suburban Railroad Co. is being organized to build an electric railroad of considerable length. A. H. Swarthout, 125 North Washington Ave., is reported interested in the enterprise.

ST. LOUIS, MO.—The St. Louis & Ferguson Railroad Co. was recently incorporated with a capital of $50,000, to build an electric railroad from the junction of the Lucas and Hunt roads in St. Louis County, to the town of Ferguson, St. Louis County. Among the incorporators are Albert Arnstein, St. Louis, Mo.; E. H. Benoist, J. B. Greensfelder, M. B. Greensfelder, and Bernard Greensfelder, St. Louis County.

SHAMOKIN, PA.—Press reports state that surveys have been made for an extension of the Shamo- n & Mount Carmel Electric Railway. The proposed line will be built this summer, and will extend from Mount Carmel to Locust Dale, where connections will be made with the line of the Schuylkill Traction Company, thus affording a continuous electric line from Shamokin to Shenandoah and Mahanoy City.

WAUPAUCA, WIS.—Press reports state that Paul H. Sanborn of Waukegan is interested in the new electric railroad to be built from Waupauca to the Soldiers' Home, a distance of 7 miles.

WESTFIELD (S. I.), N. Y.—The Westfield Realty & Construction Co. has filed articles of incorporation. It is the purpose of the company to develop real estate and build electric railroads. Among those interested in the company are J. C. Hinchliffe, W. B. Rockwell and M. J. Wrightman, all at present interested in the Staten Island Midland Railroad Co.

WEST NEWTON, PA.—The stockholders of the West Newton Northern Railway Co. elected directors as follows: W. W. Patterson of Homestead, President; J. O. Tosh, Pittsburgh; F. M. Null, Dawson; C. M. Suter, of Suterville; Dr. J. N. Weddell and T. F. Van Kirk, of West Newton. This company was granted a charter Feb. 1, 1897, and reported in the Railroad Gazette Feb. 11 and Aug. 2, 1897. It will build an electric railroad from Bellevernon on the Monongahela River to Irwin on the Pennsylvania Railroad.

GENERAL RAILROAD NEWS.

Railroad Earnings.

Showing the gross and net earnings for the periods ending at the dates named:

December 31:		1897.	1896.	Inc. or Dec.	
Missouri Pacific.					
12 months	Gross	$24,805,451	$22,011,960	I.	$2,793,491
12 "	Net	7,351,339	5,520,636	I.	1,830,703
Terminal Association of St. Louis.					
12 months	Gross	$1,862,228	$1,799,207	I.	$63,021
12 "	Net	1,184,641	1,048,440	I.	136,201

January 31:		1898.	1897.	Inc. or Dec.	
Buffalo, Rochester & Pittsburgh.					
1 month	Gross	$283,198	$250,438	I.	$32,760
1 "	Net	102,369	82,254	I.	20,115
7 months	Gross	2,183,054	2,045,472	I.	137,582
7 "	Net	795,559	691,530	I.	104,029
Cleveland, Cincinnati, Chicago & St. Louis.					
1 month	Gross	$1,098,573	$1,056,721	I.	$41,852
1 "	Net	272,873	277,623	D.	4,750
7 months	Gross	8,519,414	7,746,144	I.	773,270
7 "	Net	1,970,258	1,955,761	I.	14,497
Denver & Rio Grande.					
1 month	Gross	$644,627	$485,105	I.	$159,522
1 "	Net	239,262	174,198	I.	65,064
7 months	Gross	5,120,095	4,254,564	I.	865,531
7 "	Net	2,025,907	1,710,667	I.	314,240
Kansas City, Fort Scott & Memphis.					
1 month	Gross	$401,699	$357,961	I.	$43,738
1 "	Net	107,687	101,397	I.	6,290
7 months	Gross	3,047,624	2,703,117	I.	344,507
7 "	Net	941,969	869,447	I.	72,522
Long Island.					
1 month	Gross	$246,472	$202,773	I.	$43,699
1 "	Net	8,160	*17,789	I.	25,949
7 months	Gross	2,993,444	2,737,604	I.	255,840
7 "	Net	1,040,075	932,611	I.	107,464
*Loss.					
Mexican Central.*					
1 month	Gross	$1,087,022	$1,073,902	I.	$13,120
1 "	Net	279,288	377,510	D.	98,222
(* Mexican currency.)					
Mexican International.					
1 month	Gross	$270,801	$266,315	I.	$4,486
1 "	Net	95,391	106,623	D.	11,232
Mobile & Ohio.					
1 month	Gross	$373,134	$322,798	I.	$50,336
1 "	Net	124,440	115,237	I.	9,203
7 months	Gross	2,508,507	2,313,324	I.	195,183
7 "	Net	942,214	879,346	I.	62,868
New York, Ontario & Western.					
1 month	Gross	$287,787	$256,869	I.	$30,918
1 "	Net	74,435	42,307	I.	32,128
7 months	Gross	2,470,308	2,383,594	I.	86,714
7 "	Net	775,910	738,824	I.	37,086
Norfolk & Western.					
1 month	Gross	$915,747	$882,070	I.	$33,677
1 "	Net	282,531	268,718	I.	13,813
7 months	Gross	6,687,904	6,299,692	I.	388,212
7 "	Net	2,166,817	1,534,055	I.	632,762
Oregon Railroad & Navigation Co.					
1 month	Gross	$469,496	$299,746	I.	$169,750
1 "	Net	137,161	73,591	I.	64,570
Oregon Short Line.					
1 month	Gross	$447,370	$397,909	I.	$49,461
1 "	Net	176,626	154,251	I.	22,375
7 months	Gross	3,710,974	3,418,151	I.	292,823
7 "	Net	1,483,029	1,178,312	I.	304,717
Philadelphia, Wilmington & Baltimore.					
1 month	Gross	.....	.....	I.	$62,800
1 "	Net	.....	.....	I.	13,000
3 months	Gross	.....	.....	I.	213,700
3 "	Net	.....	.....	I.	70,200
Southern Pacific.					
1 month	Gross	$4,367,707	$3,665,610	I.	$702,097
1 "	Net	1,496,595	1,063,322	I.	433,273
7 months	Gross	32,838,221	30,117,882	I.	2,720,339
7 "	Net	13,512,519	11,503,445	I.	2,009,074
Union Pacific, Denver & Gulf.					
1 month	Gross	$323,290	$248,247	I.	$75,043
1 "	Net	113,931	80,803	I.	33,128
West Jersey & Seashore.					
1 month	Gross	.....	.....	I.	$17,200
1 "	Net	.....	.....	I.	12,300

BOSTON & LOWELL.—The company has petitioned to the Massachusetts Railroad Commission for permission to issue bonds amounting to $500,000 to retire bonds due in April. (See this column for Jan. 4.)

BROOKLYN ELEVATED.—Referee J. Edward Swanstrom, as Trustee, to foreclose a mortgage

on this road and the Seaside & Brooklyn, has reported to Justice Gaynor in the Supreme Court of Brooklyn that there is due $1,453,853, and recommends that the properties be sold together. (See this column for Feb. 4.)

CHICAGO & ATCHISON BRIDGE.—This bridge and railroad over the Missouri River at Atchison, Kan., were sold at Atchison March 4, by the order of the Federal Court, to H. E. Kelley of Cleveland, O., representative of the bridge reorganization committee, for $500,000. The bridge was sold under mortgage indebtedness of $924,000. It is used by the Chicago, Rock Island & Pacific, the Hamilton & St. Joseph, the Kansas City & Council Bluffs and the Atchison, Topeka & Santa Fe. It has been in the hands of a receiver since September, 1894. For the committee's plan of reorganization see this column for Sept. 3, 1897.

COLUMBUS, HOCKING VALLEY & TOLEDO.—The Knickerbocker Trust Co. of New York brought suit in the Federal Court at Columbus, O., March 4, for foreclosure of its mortgage for $2,000,000 on this road and for the appointment of a receiver. The company claim that the mortgage held by the Central Trust Co. is illegal for the reason that the railroad company did not act with authority, its incorporation not having been in proper form. This road went into the hands of a receiver on Feb. 25, 1897, under the mortgage of the Central Trust Co. It extends from Pomeroy, O., to Walbridge, 250 miles, with branches to Athens, Nashville, etc., of 73 miles. Including trackage on other roads, the entire system is 346 miles.

GREAT NORTHERN.—This company has sold Kuhn, Loeb & Co. $5,000,000 50-year 4 per cent. bonds of the Eastern Railway of Minnesota, for the extension of that line now under way from Fosston mine east to Duluth. (See these columns for Dec. 17 and Feb. 25).

INTERNATIONAL & GREAT NORTHERN.—The first payment of interest was made on March 1 by this company on its $2,703,500 of 4 per cent. third mortgage bonds. These bonds heretofore have been incomes. At the same time the $7,051,000 second mortgage bonds receive interest at the rate of 5 per cent. per annum instead of 4½ per cent., as under the reorganization plan of 1892. This brings an additional charge of $143,395 yearly.

KINGSTON & PEMBROKE.—At an adjourned meeting held at Kingston, Ont., Feb. 28, it was decided by a vote of 65,803 to 200, to apply for legislation to issue preferred stock and change the bonded debt of the company.

LITTLE ROCK & MEMPHIS.—The foreclosure sale of this road, which was to have been held at Little Rock March 3, has been postponed until April 18. The first order of sale was for November, 1896, and postponements have been made from time to time since. This road extends from Little Rock, Ark., to Memphis, Tenn., 135 miles. (See this column for Dec. 18.)

MAINE CENTRAL.—This company, according to report, has sold $626,500 consolidated mortgage 5 per cent. bonds, due April, 1912, at 103.29 and accrued interest.

MANHATTAN, ALMA & BURLINGTON.—The Atchison, Topeka & Santa Fe and the Union Pacific petitioned Judge Williams at Topeka, Kan., March 7 to sell the Manhattan, Alma & Burlington, of which they own all the bonds. Judge Williams instructed Hiram P. Dillon, as Special Master, to advertise and sell the property at a date to be fixed by him. The road is operated by the Atchison, Topeka & Santa Fe, and extends from Manhattan, Kan., to Burlingame, 56.62 miles. (See this column for Dec. 31.)

MANITOBA & NORTHWESTERN.—A letter from this company states that it is understood that a syndicate has purchased the majority of the first mortgage bonds on what is known as the first division, or 180 miles of this company's line. The personnel of the syndicate, or in whose interest the purchase has been made, have not yet been disclosed. The line extends from Portage la Prairie to Yorkton, Manitoba, 223.05 miles, and from Binscarth to Russell, Manitoba, 11.45 miles, with a lease of the Saskatchewan & Western from Minnedosa to Rapid City, 15.47 miles, making a total of 249.97 miles. The road is in the hands of a receiver.

MORRISTOWN & CUMBERLAND GAP.—The first payment of $10,000 has been made by Adolph Segal, of Philadelphia, on this road, which he purchased Feb. 19 for $61,000. The name of the road is to be changed to the Morristown & Bristol. It now runs from Morristown, Tenn., to Corrytown, 40 miles. (See this column for Feb. 25.)

NASHVILLE, TELLICO & CHARLESTON.—This road will be sold at Madisonville, Tenn., April 12. It extends from Athens, Tenn., to Tellico Plains, 23 miles, and is the successor to the Nashville & Tellico.

NEW ORLEANS & NORTHWESTERN.—On Feb. 21 the United States Court ordered Louis K. Hyde, receiver of this company, to transfer to its officers all the property in his possession as receiver of the Court and the company, possession the day following.

SOUTHERN.—The Central Trust Co. of New York gives notice to holders of Richmond & Danville equipment 5 per cent. mortgage bonds, dated Sept. 3, 1889, that sealed proposals will be received at a rate not to exceed par and accrued interests for enough to consume $48,233. The offer is open until March 28.

SUMMIT BRANCH.—The reorganization committee has issued a circular to stockholders advising them that the investigations of the engineers of the company under Gen. Isaac J. Wister, report that a further assessment of from $350,000 to $600,000 will be necessary in order to make the property productive. The company owns coal mines at Summit, Pa., with a line of railroad three-fourths of a mile in length and leases the line and mines of the Lykens Valley Railroad, both being operated under the control of the Northern Central line of the Pennsylvania, which owns $2,190,200 of the capital stock and $480,000 of the $1,075,000 7 per cent. bonds. Default in the interest on these bonds occurred Jan. 1, 1896, and the plan of reorganization was issued in November following, which provided for the scaling of the isterest on the bonds from 7 to 5 per cent., the issue of $1,200,000 more bonds, paying the over-due interest at the rate of 5 per cent. in scrip; also assessing each share of the old stock $9 and giving stockholders one-third of their holdings in new shares. In view of the report of the engineers, the reorganization committee now suggests that if the stockholders desire to assess themselves sufficiently to carry on the work, it must be at their own risk, and that if they prefer to withdraw from the enterprise and to receive back their present assessments, less expenses, the committee will give every proper assistance in its power. In the event that the stockholders withdraw, the question of costs or further developments must be met by the bondholders. The engineers report that nearly 16,000,000 tons of minerable coal is visible on the property.

UNION PACIFIC.—An application made by Arthur W. Barnard to Justice Emory A. Chase in the Special Term of the Supreme Court to restrain the Reorganization Committee from issuing bonds in excess of $75,000,000 has been denied. The plan of reorganization calls for an issue of $100,000,000 first mortgage 4 per cent. gold bonds, of which it is now proposed to issue $90,000,000.

William D. Cornish, Special Master, gives notice to all holders of mortgage bonds on the Eastern Division dated Aug. 1, 1865, that he will be prepared to pay these bonds with matured coupons at the office of the Mercantile Trust Co, New York, on April 25, and that interest will cease thereon after that date. The Union Trust Co., the new depositary of the committee under the bondholders' agreement of March 25, 1897, will pay at its office the certificates of deposit for the Union Pacific collateral trust 6 per cent. bonds on or before March 11, less one-half of 1 per cent. of the par value to be retained for compensation and expenses of the committee.

UNION PACIFIC, LINCOLN & COLORADO.—The depositing bondholders of this company at a meeting held last week voted to accept the terms of the Union Pacific Reorganization Committee, which are 2 per cent. cash, 40 per cent. in new Union Pacific preferred stock and 60 per cent. new Union Pacific common stock in exchange for their bonds. Of the $4,380,000 of the bonds $3,572,000 had been deposited in September under this agreement. To take up the entire issue will require $1,752,000 of the new Union Pacific preferred and $2,628,000 of the new common stock, besides $87,600 cash.

WALTERBORO & WESTERN.—R. G. Irwin and D. F. Jack, representing the Plant System, have completed the purchase of the Walterboro & West ern at a price not stated. This road extends from Walterboro, S. C., to Ehrhardt, 27 miles, and was completed in 1896.

Electric Railroad News.

ASBURY PARK, N. J.—The Atlantic Highlands, Red Bank & Long Branch Electric Railway Co. has completed its extension from Red Bank to Atlantic Highlands via Fair Haven. With this extension the company will operate in all about 26 miles of road.

AUBURN, N. Y.—The Auburn Inter-Urban Railway Co. has elected the following officers: President, George B. Leonard; vice-president, L. S. Ebright, secretary and treasurer, Frederick T. Pierson. Directors recently elected are George B. Turner, L. S. Ebright, George B. Longstreet, A. P. Rich, E. I. Edgecomb, George B. Leonard, George N. Cheney, Frederick T. Pierson and C. D. Beebe.

CANTON, O.—Solicitor E. G. Willison, on behalf of the city of Massillon, has begun suit against the Canton-Massillon Electric Railway Company, J. W. McClymonds, W. A. Lynch and C. A. Gates to recover $3,000, the bond forfeited by failure of the railway company to extend its line to Navarre.

EL PASO, TEX.—The El Paso & Juarez Ave. Street Railway Co., now running 10 horse cars, intends to change to electric traction.

HOLYOKE, MASS.—The Holyoke Street Railway has petitioned the Railroad Commissioners for authority to increase its capital stock $100,000.

HUNTINGTON (L. I.), N. Y.—Press reports state that the Long Island Railroad has bought the Huntington Railroad, a horse road, about 3 miles long, connecting Huntington Harbor with the village and the latter place with the Long Island Station. The road will be operated by electricity hereafter.

NEW YORK, N. Y.—The Fourth Ave. cars of the Metropolitan Traction Co. are now running by the electric conduit system as far south as the City Hall, thus establishing a complete electric line to Harlem.

SOUTH BEND, IND.—Press reports state that Hon. Arthur Kennedy and DeWitt Dilworth of Pittsburgh, representing a syndicate, have purchased the South Bend & Mishawaka electric railway line.

WORCESTER, MASS.—The Worcester Street Railway Co. has petitioned the Legislature for the right to carry freight.

TRAFFIC.

Traffic Notes.

The Chicago & Alton has lately been running special theater trains to Alton, Bloomington and other cities on the line of the road where the theater traffic is not sufficient to warrant the regular running of such trains. Dates are selected when the most attractive shows can be seen, and fares are made very low from places within about 50 miles. On Feb. 28 two trains, one from Roodhouse and one from Auburn, took 700 passengers into Alton.

The connections of the Kansas City, Pittsburgh & Gulf having withdrawn all through tariffs with that line, it is now obliged to pay local tariff rates from junction points on all through freight. The Gulf line announces its intention to prosecute an appeal from the decision of the Kansas Federal court in the Santa Fe case, and threatens to bring suits for damages in cases where it is compelled to repay freight charges on through shipments.

The Texas railroads have re-inserted the Lone Star Steamship Line in their through tariffs, in conformity with the injunction granted at Galveston. The latter's agents assert emphatically that they are in the carrying business to stay, and that all they ask is an equal chance with the other steamship lines. The probabilities are that another war of water rates will ensue, as it is not likely that the other lines are any more willing to divide business with their new competitor than they were last season. If this occurs, the railroads will again be under the necessity of using their utmost effort to keep the reductions out of Texas Territory.

The Canadian Pacific Controversy.

No settlement has yet been reached in the controversy between the Canadian Pacific and the lines of the Western Passenger Association. A conference was held in this city March 8 between the Joint Passenger Committee of the Trunk Lines, the Canadian Pacific, Great Northern and the Southwestern and New England lines, but without reaching any conclusion. Another meeting has been arranged for March 14, at which assurances have been received from the Western lines that they will be represented at this meeting. The Western lines are hopeful of the success of the rebate plan which they have inaugurated in connection with the reduced rates, and expect to keep the reductions out of local territory and Missouri River points. Reduced rates are being filed from day to day, and, unless the war is soon brought to an end, great loss of revenue is inevitable. The latest tariffs quote first-class rates from San Francisco to St. Paul, $25; Chicago, $36.50; New York, $40. St. Paul to Puget Sound points, $20; New York, $18.

The Joint Traffic lines are working hard to keep out of the fight and bring about a settlement of the controversy. One of the complications of the situation is the action of the Grand Trunk in reducing rates from Buffalo and in placing its tickets on sale in the immigrant office at Ellis Island. The Western lines requested permission for the Grand Trunk to sell tickets at the agency, which the Trunk Lines refused to give, on the ground that the Grand Trunk was not an initial line, and that the evident purpose of the request was to boycott the Canadian Pacific. The Grand Trunk, notwithstanding, has placed its tickets on sale with the agent of the Western Lines Immigrant Association at the Barge Office. The Lehigh Valley, the initial line, denies that it is a party to this arrangement.

Chicago Traffic Matters.

Chicago, March 7, 1898.

As a result of a conference between the Executive Committee of the Western Passenger Association and the Union Pacific Company that road has become a member of the Immigrant Clearing Bureau and also a party to the joint arrangements between the Western lines and the trans-Atlantitc steamship companies.

Western roads have agreed upon a rate of one fare for the round trip for the State convention of the Prohibition party to be held in Peoria in June.

To fight the Canadian Pacific the Western lines have changed the numerous plans previously announced to the extent that the low flat rates they will make will apply only to parties of ten or more.

Three more indictments have been found against ticket brokers in this city for manipulating transportation, the indictments being for forgery.

Chairman Midgely of the Western Joint Traffic Bureau is out with a letter reprimanding the traffic officials under his jurisdiction, in which he tells them that their promises and pledges to maintain rates are "as fleeting as snowflakes on a rushing stream and that they rest so lightly on the consciences of some that they were never felt." The bureau is probably disrupted, the St. Paul road refusing longer to pay its share of the salaries of the commissioners.

A new understanding has been reached for the coming season on lake line differentials. The same rates are to apply on westbound business as last season, but on eastbound traffic the differentials will be 20 per cent. lower.

Vessel men state that they expect navigation to open about the last week in April.

Chicago jobbers have decided to keep the Chicago Freight Bureau going, having agreed to increase their support financially and make up the deficiency caused by the withdrawal of the Board of Trade. The bureau has moved its quarters into a less expensive building and Commissioner Iglehart will still remain at its head.

The Central Passenger lines have agreed not to discontinue the sale of the 5,000 interchangeable mileage ticket, notwithstanding its sales are very unsatisfactory. The same roads have passed a strong resolution decrying the use of the American flag for railroad advertising purposes.

The Northwestern road in connection with the Lake Shore east from Chicago is making a 21-cent rate on flour from Minneapolis to the seaboard. The regular rate from Chicago to the seaboard alone is 20 cents, so this is a plain indication that somebody is cuttting the rate.

The Illinois Railroad Commissioners are again busy revising the classification of freight rates in this State. No radical changes, it is understood, will be made.

The question of applying excess fares on the fast trains between this city and Denver is again in the air, the presidents having referred the matter back to the general passenger agents to fix upon a date when such extra fares shall be made operative and those officials have failed to reach any agreement.

All the roads running both east and west from Chicago report a heavy shortage of freight cars.

Eastbound shipments from Chicago and Chicago Junctions to points at and beyond the Western termini of the trunk lines for the week ending March 3 amounted to 191,870 tons, as compared with 165,383 tons the preceding week. This statement includes 108,713 tons of grain, 25,875 tons of flour and 20,325 tons of provisions, but not live stock. The following is the statement in detail for the two weeks:

Roads.	Week Ending March 3. Tons.	P. C.	Week Ending February 24. Tons.	P. C.
Baltimore & Ohio	13,642	7.1	7,792	4.7
C., C., C. & St. Louis	15,845	8.3	13,399	8.1
Erie	20,607	10.7	19,742	11.09
Grand Trunk	20,414	10.6	18,073	10.9
L. S. & M. S.	33,161	17.3	21,557	13.0
Michigan Central	19,230	10.0	20,966	12.7
N. Y., Chi. & St. L.	22,278	11.6	18,761	11.4
Pitts., Cin., Chi. & St. L.	12,780	6.7	11,317	6.9
Pitts., Ft. Wayne & Chi.	24,150	12.6	22,684	13.7
Wabash	9,763	5.1	11,092	6.7
Totals	191,870	100.0	165,383	100.0